

**AJMR**

**ISSN (Online) : 2278 - 4853**

**Asian Journal of  
Multidimensional  
Research**



*Published by :*  
**www.tarj.in**

Editor-in-Chief : Dr. Esha Jain

Impact Factor : SJIF 2017 = 5.443

Frequency : Monthly

Country : India

Language : English

Start Year : 2012

Published by : [www.tarj.in](http://www.tarj.in)

Indexed/ Listed at : Ulrich's Periodicals  
Directory, ProQuest, U.S.A.

E-mail id: [tarjjournals@gmail.com](mailto:tarjjournals@gmail.com)

## **VISION**

The vision of the journals is to provide an academic platform to scholars all over the world to publish their novel, original, empirical and high quality research work. It propose to encourage research relating to latest trends and practices in international business, finance, banking, service marketing, human resource management, corporate governance, social responsibility and emerging paradigms in allied areas of management. It intends to reach the researcher's with plethora of knowledge to generate a pool of research content and propose problem solving models to address the current and emerging issues at the national and international level. Further, it aims to share and disseminate the empirical research findings with academia, industry, policy makers, and consultants with an approach to incorporate the research recommendations for the benefit of one and all.



| SR. NO. | PARTICULAR  | PAGE NO. |
|---------|---|----------|
| 1.      | <b>INTER-DISTRICT ANALYSIS OF MGNREGA: A STUDY OF TELANGANA STATE (2006-16)</b><br>Satyanarayana Turangi  | 8-18     |
| 2.      | <b>ANATOMY OF ADULTERY LAW</b><br>Sinta Umpo  | 19-25    |
| 3.      | <b>HIERARCHICAL PATTERN AND DISTRIBUTION OF SERVICE CENTRES AND IT'S PROBLEMS: A CASE STUDY OF MUZAFFARPUR DISTRICT</b><br>Dr. Supriya  | 26-42    |
| 4.      | <b>APPLICATION OF TAM AND THE ROLE OF GENDER IN ADOPTING MOBILE APPS FOR SHOPPING: AN EMPIRICAL ANALYSIS.</b><br>Samala Nagaraj   | 43-52    |
| 5.      | <b>SYNTHESIS, SPECTRAL AND ANTIBACTERIAL STUDIES OF DEMI-MACROCYCLES OF LIGAND N<sub>2</sub>O<sub>2</sub> WITH FE (II), AND ZN(II) IONS</b><br>Sameena Rasheed, Arvind Prasad Dwivedi | 53-59    |
| 6.      | <b>UNDERSTANDING HOUSEHOLDS' VULNERABILITY TO FLOODS: A STUDY IN DHEMAJI DISTRICT OF ASSAM, INDIA</b><br>Rupon Basumatary   | 60-72    |
| 7.      | <b>MATERNAL HEALTH SERVICES AND DALIT WOMEN: A FIELD STUDY IN ODISHA</b><br>Dr. J. Rani Ratna Prabha, SudamTandi  | 73-84    |
| 8.      | <b>REGIONAL DISPARITY IN ODISHA AGRICULTURE: A DISTRICT WISE ANALYSIS</b><br>Pragnya Laxmi Padhi  | 85-96    |

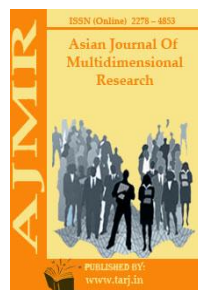
|     |   |         |
|-----|---|---------|
| 9.  | <b>A COMPARATIVE STUDY OF CUSTOMERS' PERCEPTIONS TOWARDS MANAGERIAL PRACTICES OF PDS IN CHHATTISGARH AND MIZORAM</b><br>Lalropuii, NVR Jyoti Kumar                                      | 97-106  |
| 10. | <b>LIVELIHOOD OF FISHING COMMUNITY AND WATER POLLUTION OF MAHANADI RIVER: A STUDY IN ODISHA</b><br>Subal Tandi, Sudam Tandi   | 107-119 |
| 11. | <b>DIETARY INTAKE AND NUTRITIONAL STATUS OF TRIBALS IN ODISHA</b><br>Dr. Siba Prasad Pothal, Dr. Bijaya Kumar Panda   | 120-133 |
| 12. | <b>TRUMP'S DEADLY PROCLAMATION ON CLIMATE CHANGE: A PARADIGM SHIFT</b><br>Rajesh Sahu, Dr. Pramod Kumar   | 134-149 |
| 13. | <b>EXPLORING RELATIONSHIPS AMONG INTELLIGENCE QUOTIENT, EMOTIONAL QUOTIENT, SPIRITUAL QUOTIENT AND QUALITY OF LIFE</b><br>Dr. Nidhi Shukla, Dr. Shweta Gupta                            | 150-158 |
| 14. | <b>IMPACT OF INTEGRATED NUTRIENT AND PEST MANAGEMENT SYSTEM THROUGH ORGANIC FARMING IN THE TRADITIONAL RICE VARIETIES</b><br>K. Ahilandeswari, N. Uma Maheswari                         | 159-167 |
| 15. | <b>APPLICATION OF ITEM RESPONSE THEORY IN MEASURING FINANCIAL LITERACY</b><br>Dr. Rakesh Krishnan M   | 168-173 |
| 16. | <b>MAKE IN INDIA: "AN ACTION AGENDA FOR ENTREPRENEURSHIP AND INNOVATION IN RURAL AREAS, INDIA."</b><br>Mohd Shuaib Siddiqui, Dr. Aftab Alam, Prof. Dr. Mairaj Salim                     | 174-180 |
| 17. | <b>CONTEXTUALISING INCOME GROWTH AGAINST THE BACKDROP OF PUBLIC EXPENDITURE AGGREGATES: A CASE STUDY OF ASSAM FOR THE PERIOD 1980-2014.</b><br>Manoj Kumar Talukdar, Biswambhara Mishra | 181-197 |

|     |  |         |
|-----|--|---------|
| 18. | <b>CAPITAL STRUCTURE ANALYSIS OF A SMALL ENTERPRISE - A CASE STUDY OF RADHIKA VEGETABLE OILS PRIVATE LIMITED</b><br>Dr. Venkateswararao. Podile, Fr. Kataru Anil Kumar, Dr. Ch. Hema Venkata Siva Sree | 198-209 |
| 19. | <b>REVIEW OF LITERATURE ON THE SCOPE OF SOLAR PHOTOVOLTAIC IN INDIA</b><br>Sara Kunnath, Chaya Bagrecha  | 210-219 |
| 20. | <b>LIQUID INOCULANTS OF PLANT GROWTH PROMOTING BACTERIA (PGPR) ON SEED VIGOUR AND GROWTH OF RICE SEEDLINGS (CO -43)</b><br>G.Manimekalai, M.Kannahi  | 220-227 |
| 21. | <b>MULTIVARIATE ANALYSIS OF TRUST AND COMMITMENT ON EFFECTIVENESS OF PERFORMANCE APPRAISAL SYSTEM</b><br>Dr Kota Neela Mani Kanta, Dr. P Srivalli  | 228-240 |
| 22. | <b>ANTECEDENTS OF BRAND IMAGE OF A UNIVERSITY</b><br>Mr. Abdul Rahim Ahmed Munshi  | 241-248 |
| 23. | <b>POLITICAL PARTICIPATION AND REPRESENTATION OF WOMEN IN INDIAN POLITICS: A STUDY</b><br>Dr. Rajinder Singh   | 249-266 |
| 24. | <b>ROLE OF HEALTHCARE SECTOR IN GROWTH OF MEDICAL TOURISM IN INDIA</b><br>Parneet Kaur   | 267-272 |
| 25. | <b>GREEN MARKETING IN INDIA: AN OVERVIEW</b><br>Muskan Kaura   | 273-281 |
| 26. | <b>REACTION OF STOCK PRICES TO EARNINGS ANNOUNCEMENTS</b><br>Prof. Iqbal Thonse Hawaldar   | 282-293 |
| 27. | <b>ROLE OF CIVIL SOCIETY IN EMPOWERMENT OF WEAKER SECTIONS</b><br>Dr. Mohinder Singh   | 294-299 |



|     |  |         |
|-----|--|---------|
| 28. | <b>IMPACT OF CULTURAL CLASH AND PARTICIPATION OF WOMEN IN 'SOME INNER FURY' BY KAMALA MARKANDAYA</b><br>P.Jagadeeswari   | 300-304 |
| 29. | <b>ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN PROMOTING MEDICAL TOURISM IN INDIA</b><br>Parneet Kaur  | 305-312 |
| 30. | <b>POLITICS OF REGIONALISM IN JAMMU AND KASHMIR: CAUSES, IMPLICATIONS AND REMEDIES</b><br>Maqsood Hussain Para   | 313-320 |
| 31. | <b>PERCEPTION ON IT AND IT'S DEPENDENCY UPON AGE OF USERS IN NORTH EASTERN MAHARASHTRA</b><br>Dr. Rajesh Kumar Kashyap, Dr. Anand G. Jumle   | 321-328 |
| 32. | <b>EDUCATING CULTURALLY DISADVANTAGED STUDENTS: ATTITUDE OF PROSPECTIVE TEACHERS</b><br>Roopa Gopal V , Prof. (Dr.) P.K. Aruna   | 329-335 |
| 33. | <b>IMPACT OF VALUATION RATIOS ON THE PERFORMANCE OF MAJOR INDIAN SECTORAL MARKET INDICES</b><br>N. Venkatesh Kumar, Dr. M Ganesh Babu  | 336-344 |
| 34. | <b>YOGA AND STRESS MANAGEMENT</b><br>Dr. Surender Tanwer   | 345-348 |
| 35. | <b>THE CONCEPT OF GREEN HRM-A REVIEW OF LITERATURE</b><br>Sonal Singh Rathi, Dr. Vikas nath  | 349-378 |
| 36. | <b>DUAL CAREER COUPLE'S PROBLEMS AND COPING STRATEGIES IN BALANCING WORK AND LIFE IN DIFFERENT SECTORS IN INDIAN PERSPECTIVE</b><br>Alita Beniwal, Dr. Tripti Bisawa                 | 379-386 |
| 37. | <b>MECHANISM FOR HANDLING OF CUSTOMERS GRIEVANCE ON E-BANKING SERVICES OF SELECTED COMMERCIAL BANKS IN ODISHA: A COMPARATIVE STUDY</b><br>Chittaranjan Khuntia, Dr.Kishore Kumar Das | 387-401 |
| 38. | <b>DIGITAL INDIA: A VISION TO EMPOWER RURAL INDIA</b><br>Dr. Dimpal Vij  | 402-413 |

|     |  |         |
|-----|--|---------|
| 39. | <b>COMPARATIVE STUDY OF ANTHROPOMETRIC MEASUREMENTS AND PHYSICAL FITNESS BETWEEN HARYANA URBAN AND RURAL SCHOOL BOYS</b><br>Surinder Tanwer                | 414-417 |
| 40. | <b>TECHNOLOGY OF CULTIVATION OF PEKING CABBAGE IN VARIOUS SCHEMES</b><br>Khurramov Ulugbek Holmamatovich   | 418-424 |
| 41. | <b>METHODOLOGY OF INFORMATION TECHNOLOGY INFORMATION OF IFODALIZATION OF COMPONENTS IN ORGANIC CHEMISTRY COURSE</b><br>Shernazarov I. E., Abdukadirov A.A. | 425-432 |
| 42. | <b>MUHAMMAD IBRAHEEM AL-GEYOUSHI'S CONTRIBUTION ON THE STUDYING OF SCIENTIFIC HERITAGE OF AL-HAKIM AL-TIRMIDHI</b><br>Nodir Karimov Rakhmonkulovich        | 433-440 |
| 43. | <b>THE ROLE OF RURAL TOURISM IN THE DEVELOPMENT OF ECOTOURISM</b><br>A.M. Mahmudova  | 441-447 |
| 44. | <b>HISTORICAL AND RELIGIOUS MONUMENT OF MUHAMMAD SHARIF (MEVLANAGREKUSHOH)</b><br>Ozodbek Nematov  | 448-452 |
| 45. | <b>INFORMATION TECHNOLOGY USAGE METHODS IN EXPRESSING COMPONENTS IN ORGANIC CHEMISTRY COURSE</b><br>Shernazarov I. E., Abdukadirov A.A.                    | 453-460 |
| 46. | <b>A SCIENTIFIC STUDY ON INTERNET BASED CO-OPERATIVE E-LEARNING: ONE MORE STEP OF DIGITIZAL WORLD</b><br>Dr. Santosh Parakh, Dr. Kavita Suryawanshi        | 461-468 |
| 47. | <b>ECONOMIC DIVERSIFICATION IN THE WEST ASIAN ECONOMIES AND INTEREST OF THE WEST</b><br>Maajid Hussain Bhat  | 469-474 |
| 48. | <b>E-GOVERNANCE INITIATIVES IN PUNJAB</b><br>Dr. Navneet Kaur  | 475-481 |
| 49. | <b>E-BANKING KEY FOR GROWTH OF BANKING INDUSTRY</b><br>Gurjinder Kaur  | 482-492 |



## INTER-DISTRICT ANALYSIS OF MGNREGA: A STUDY OF TELANGANA STATE (2006-16)

**Satyanarayana Turangi\***

\*Research Scholar,  
University of Hyderabad,  
Hyderabad, INDIA.  
Email id: turangieco@gmail.com

### ABSTRACT

*Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is a major flagship programme in the history of Indian employment policy. So far, it has successfully completed a decade of the journey in its implementation during the period of 2006-07 to 2015-16. This study attempts to examine the macro-level status and to explore inter-district variations in the performance of MGNREGA in the newly formed state of Telangana. In the state, average employment given per household under MGNREGA is 49 days, which is less than half of the proposed target during 2006-16. The MGNREGA employment generation has been decelerating after 2009-10 in the state. There is no uniformity among the districts in the performance of MGNREGA, and it varies across the indicators. The relation between household's coverage and employment generation is found to be negative. On the whole, MGNREGA performance is not satisfactory as it couldn't provide more employment in economically backward districts.*

**KEYWORDS:** *Implementation, Flagship, Inter-District, Economically, Geographical, Perennial*



**INTRODUCTION:**

Separating from erstwhile Andhra Pradesh on June 2<sup>nd</sup>, 2014, Telangana emerged as 29<sup>th</sup> Indian state after a prolonged struggle. Telangana is the twelfth largest state in the country in terms of both geographical area and population size. According to 2011 Census, around 61.33 percent of the population live in rural areas, mostly depending upon agriculture. Although two perennial rivers (The Godavari and The Krishna) are passing through the state, agriculture is carried out largely under bore-wells (groundwater) rather than surface irrigation [Subrahmanyam, S. (2002)]. The share of agriculture is gradually declining in the Gross State Domestic Product over a period of time. It has declined from 17.9 to 12.8 between 2004-05 and 2014-15 [Socio Economic Outlook-Telangana (2015)]. The most important feature is both small and marginal holdings constitute around 85.9 percent in total agricultural holdings with an average size of 1.11 hectares; which are highly uneconomical. Farming is not always wieldy and sustainable in such uneconomic holdings constrained by the irregularity of rains, climate change, depletion of ground water, escalation of input costs and declining profitability. The situation led the farmers to take an extreme step of committing suicides as they were driven into a debt trap in many cases.

The formation of Telangana as separate state has raised a lot of hopes and expectations among its 35 million people about more job opportunities, inclusive growth and an improvement in standard of living. At the same time, farming community has expectations for availability of water and electricity to get rid of agrarian crisis and in improving agricultural growth. According to National Crime Records Bureau (NCRB) of India, around 898 farmers committed suicides in the same year of the formation of the state. After Maharashtra, the highest number of farmers' suicides happened in Telangana. The situation clearly lauds about the farm conditions and agrarian crisis in the region [Galab, S. et al. (2009)]. In such scenario, employment and livelihood conditions of the landless, small and marginal farmers are highly problematic. Therefore, Mahatma Gandhi National Rural Employment Guarantee Act is very crucial for providing employment and income generation to the rural poor in the region. The present study is intended to understand the performance of MGNREGA in Telangana since its inception. It mainly focuses on MGNREGA performance at the aggregate level and inter-district variations.

Since 2006, MGNREGA has been continuously providing employment at large scale in rural areas in the country. It has completed ten years of its implementation during the period of 2006-07 to 2015-16. In this period, many studies were undertaken by several researchers, academia, economists and others on issues related to MGNREGA implementation and its impacts. Initially, MGNREGA was extended to all the rural districts of the country during 2006-07 to 2008-09, which can be considered as 'expansion phase'. In this period, the employment generation under MGNREGA has not declined hitherto it was expanded to additional rural districts. But, it has faced several challenges across the country as it newly implemented/experimented in the same ancient administrative system in many states in this phase. In practice, some scholars observed that the struggle of rural workers under the Act at various stages, i.e., to get employment, to be paid on time, etc., [CAG (2007), (Dreze, J and ReetikaKhera (2009) & Hirway, I. (2010)]. The problems of under-staffing, administrative delays, improper planning, poor quality of assets and inappropriate wage rates continued for the implementation of the MGNREGA too [Ambasta, P. et al. (2008)]. After expansion phase, the period of 2009-10 to 2015-16 is considered as 'realisation phase' to evaluate its achievement towards the proposed targets. In realisation phase, MGNREGA employment has increased to its maximum in the first year that is in 2009-10; and

declined subsequently. From the beginning, the MGNREGA employment generation increased continuously from 2006-07 to 2009-10 and started declining thereafter [MGNREGA-Sameeksha (2012), MGNREGA - Report to the People (2014) & NCAER Study (2015)]. The highest employment generated under MGNREGA so far is just half of the proposed target of 100 days of employment guarantee. It clearly indicates that MGNREGA hasn't achieved its objective during a decade of its implementation.

The declining trend in employment generation under MGNREGA is similar in several states. The same trend continued in Andhra Pradesh (undivided) too. The households coverage, average employment per household, person-days generated, the proportion of households completed 100 days are highest in 2009-10 in the state of undivided Andhra Pradesh. There are wide inter-district variations in employment generation under MGNREGA [Indrakant, S. (2015)]. At this juncture, the present study focuses on MGNREGA employment generation in the newlyborn state of Telangana. The main objectives of the study are to examine macro-level trends in employment generation and analyse inter-district differences in MGNREGA performance in Telangana state. This study is based on the secondary data which is taken from MGNREGA official website ([www.nrega.nic.in](http://www.nrega.nic.in)), Telangana MGNREGA official website ([www.nrega.telangana.gov.in](http://www.nrega.telangana.gov.in)) and Census 2011. The time frame for the study is 2006-07 to 2016. This paper is organised into two sections. We discuss state level picture of the MGNREGA in Telangana in the first section and inter-district analysis in the next section.

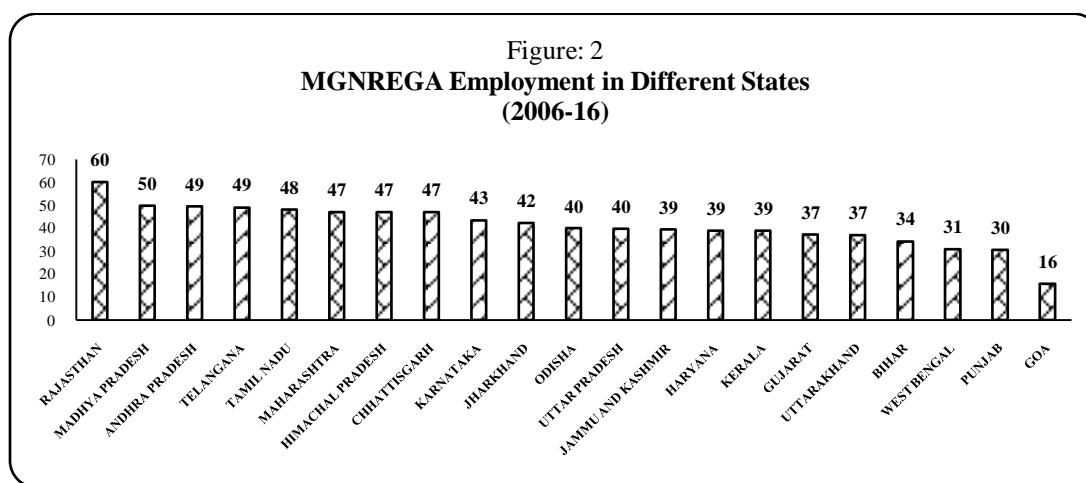
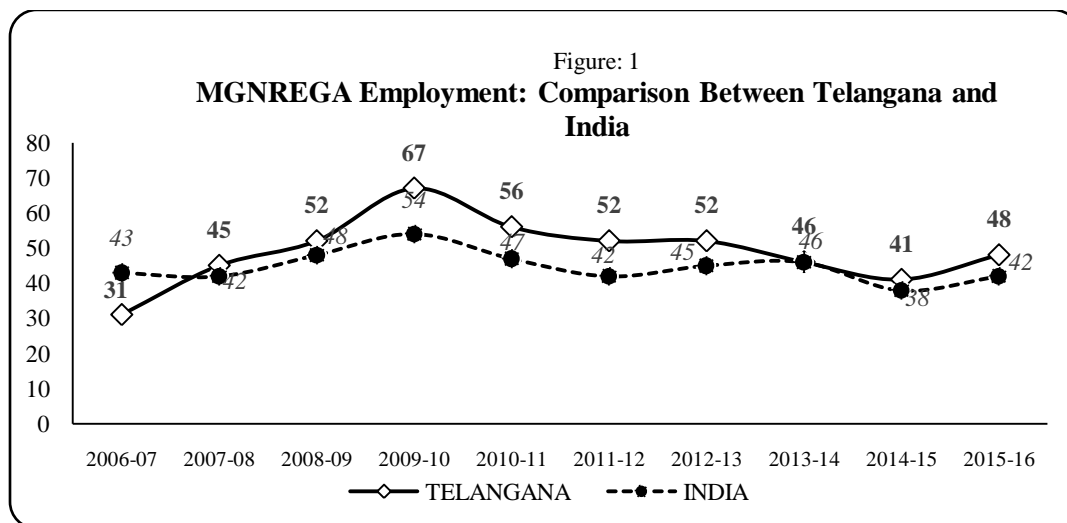
### 1. MGNREGA in Telangana:

So far, MGNREGA is nowhere completely successful in the country in providing at least 100 days of employment to the every participatory rural household during a decade of its journey. Telangana too is not an exemption for that. Nonetheless, the MGNREGA performance is moderately better in the newly formed state of Telangana. Since 2006, MGNREGA is being implemented in all the districts of Telangana, except Hyderabad. They are namely, Adilabad, Karimnagar, Khammam, Mahabubnagar, Medak, Nalgonda, Nizamabad, Rangareddy and Warangal. As of now, MGNREGA is covering approximately 8827 Gram Panchayats of 442 Mandals in the nine districts. On an average, MGNREGA has provided employment to 45 percent of total rural households in the state. Women participation is about 59 percent, which indicates their proportion in the rural labour market. It varies from 54 percent to 61 percent over a period of time. Under MGNREGA, BC (Backward Classes) workers participation is higher than rest of the social groups as like demographic composition. Among the total workers who involve in the MGNREGA, BCs are 52 percent, SCs (Scheduled Castes) are 24 percent, STs (Scheduled Tribes) are 18 percent, others are 5 percent and Muslim minorities are only 1 percent [MGNREGS-TS at Glance, (2015-16)].

### EMPLOYMENT GENERATION:

If we compare with the national average, MGNREGA employment generation is relatively better in Telangana state as portrayed in **Figure: 1**. Excluding north-eastern states, Telangana is ranked fourth place in providing more number of employment days under MGNREGA after Rajasthan, Madhya Pradesh and Andhra Pradesh as shown in **Figure: 2**. In Telangana, average employment given per household is 49 days per annum that is slightly less than half of the proposed target of the Act. The employment generation under MGNREGA increased continuously for first four years during 2006-07 to 2009-10 and declined steadily thereafter, as shown in the **Table: 1**. During the decade of implementation, the year of 2009-10 is seemed to be a saturation point

because employment generation reached to its maximum (67 days) and never provided employment beyond that limit in the later years. Under MGNREGA, maximum employment was provided in the year of 2009-10, in terms of households' coverage (53 percent), average household employment (67 days) and the percentage of households completed 100 days (21.7 percent). The MGNREGA employment has steadily declined from 67 days to 41 days between 2009-10 and 2014-15; again it has slightly improved to 48 days in the next year of 2015-16. Thus, the MGNREGA is still far away from its objective of employment guarantee in Telangana as like national level.



**TABLE: 1 MGNREGA PERFORMANCE IN TELANGANA (2006-16)**

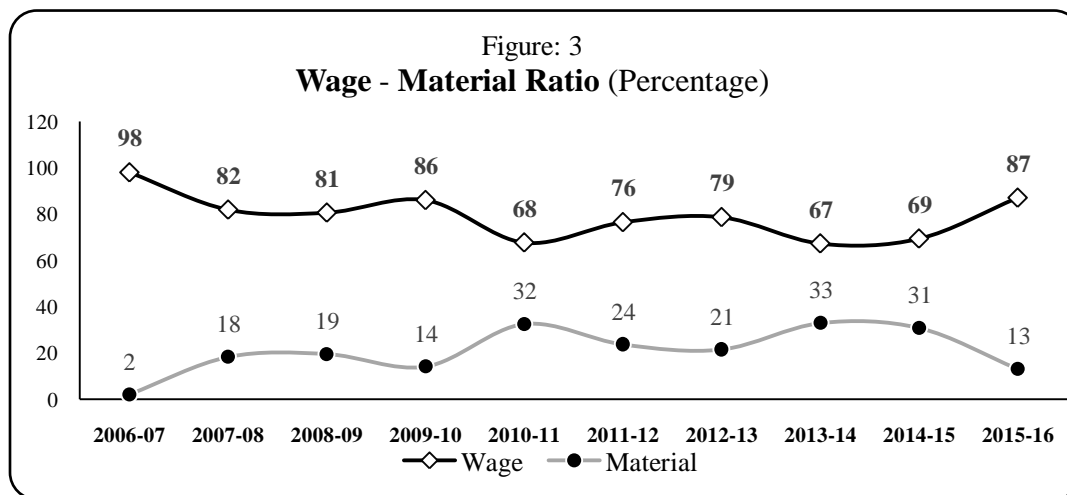
| Year           | Households Coverage | Women Participation | Average Employment Per Household | Households Completed 100 days | Work Completion Rate |
|----------------|---------------------|---------------------|----------------------------------|-------------------------------|----------------------|
| 2006-07        | 26                  | 54                  | 31                               | 1.8                           | 33.6                 |
| 2007-08        | 43                  | 60                  | 45                               | 9.5                           | 37.3                 |
| 2008-09        | 48                  | 61                  | 52                               | 8.5                           | 29.9                 |
| <b>2009-10</b> | <b>53</b>           | <b>61</b>           | <b>67</b>                        | <b>21.7</b>                   | 51.6                 |

|                                 |           |           |           |             |             |
|---------------------------------|-----------|-----------|-----------|-------------|-------------|
| 2010-11                         | 52        | 59        | 56        | 14.8        | 69.4        |
| 2011-12                         | 39        | 60        | 52        | 13.6        | 0.3         |
| 2012-13                         | 48        | 60        | 52        | 13.3        | 3.2         |
| 2013-14                         | 48        | 60        | 46        | 8.1         | 4.7         |
| 2014-15                         | 45        | 61        | 41        | 5.3         | 1.2         |
| 2015-16                         | 45        | 60        | 48        | 9.8         | 0.5         |
| <b>Average</b>                  | <b>45</b> | <b>59</b> | <b>49</b> | <b>11.2</b> | <b>23.2</b> |
| <b>Source:</b> www.nrega.nic.in |           |           |           |             |             |

Work completion rate is defined as the ratio of the number of works completed to the total number of works undertaken under MGNREGA. During the period of 2006-07 to 2015-16, work completion rate is just 23.2 percent only. What it exactly means that about 77 percent of the works were left incomplete; these unfinished assets might be useless and inappropriate. Such works cannot be resumed if they are neglected for a long time. Initially, work completion rate has gone up from 33.6 percent in 2006-07 to 69.4 percent in 2010-11. After 2010-11, the work completion rate drastically declined and worsened further. The reasons could be changing the priority of works, inadequate material expenditure, improper planning and monitoring, and lack of coordination among the implementing agencies and so on.

**EXPENDITURE:**

In general, Centre sponsors a lion share of the total expenditure for the MGNREGA implementation. The share of states is limited to administrative expenditure and some part of material expenditure as mentioned in the Act (NREGA - 2005). The proposed ratio of wage-material expenditure is 60:40. But, in practice, wage expenditure always dominates the material component in MGNREGA implementation (**Figure: 3**); whereas material expenditure is always less than stipulated 40 percent. It could be one of the reasons for poor assets creation. Therefore, wage expenditure is always high even though employment generation has decelerated over a period of time. Why because it is happening due to the revision of the MGNREGA wages by the Centre every year to adjust inflation.



On the whole, the share of wages is 70 percent, the material share is 21 percent and 9 percent of administrative expenses in total MGNREGA expenditure during the period of 2006-07 to 2015-

16. As shown in **Table: 2**, total expenditure spent for the implementation of the MGNREGA has come down after reached to its maximum in 2010-11. The MGNREGA expenditure has increased from Rs. 39943 lakhs in 2006-07 to Rs. 243200 lakhs in 2010-11. Later on, there is a decline in the MGNREGA expenditure in recent five years. It can be understood that employment deceleration is a reflection of reducing financial support for the programme.

| Year         | Wage                | Material           | Administrative    | Total Expenditure    |
|--------------|---------------------|--------------------|-------------------|----------------------|
| 2006-07      | 33848 (85)          | 691 (2)            | 5403 (13)         | 39943 (100)          |
| 2007-08      | 81284 (77)          | 18065 (17)         | 6504 (6)          | 105853 (100)         |
| 2008-09      | 103137 (76)         | 24956 (18)         | 7468 (6)          | 135561 (100)         |
| 2009-10      | 169791 (82))        | 27707 (13)         | 8912 (5)          | 206410 (100)         |
| 2010-11      | 151508 (62)         | 72749 (30)         | 18942 (8)         | <b>243200</b> (100)  |
| 2011-12      | 105074 (68)         | 32502 (21)         | 16680 (11)        | 154256 (100)         |
| 2012-13      | 127431 (71)         | 34742 (19)         | 17928 (10)        | 180101 (100)         |
| 2013-14      | 135951 (61)         | 66530 (30)         | 18931 (9)         | 221412 (100)         |
| 2014-15      | 112009 (62)         | 49737 (28)         | 18397 (10)        | 180143 (100)         |
| 2015-16      | 145609 (77)         | 21755 (12)         | 21360 (11)        | 188723 (100)         |
| <b>Total</b> | <b>1165643 (70)</b> | <b>349435 (21)</b> | <b>140525 (9)</b> | <b>1655602 (100)</b> |

**Note:** Parentheses indicate horizontal percentages  
**Source:** www.nrega.nic.in

## 2. MGNREGA: Inter-district Analysis

The MGNREGA implementation is very crucial in backward regions, which are dry land or semi-irrigated and where employment opportunities (in both farm and non-farm sectors) are limited. Obviously, workers depend more on MGNREGA and demand for employment in those districts compared to others. But, we found different observations across the districts in the performance of MGNREGA in terms of households coverage, average employment and 100 days completed households (see **Table: 3**). The MGNREGA performance in poor districts seems to be not much impressive, where it is necessary. The employment generation is absolutely better in Adilabaddistrict, and it is minimum in Karimnagar district where agriculture performance is relatively better. Excluding these two districts, there is an inverse relationship between household's coverage and employment generation across the districts.

| <i>District</i> | <i>Households Coverage (%)</i> | <i>Average Employment (Days)</i> | <i>HHs 100 days Completed (%)</i> | <i>Work Completion Rate (%)</i> |
|-----------------|--------------------------------|----------------------------------|-----------------------------------|---------------------------------|
| Rangareddy      | 32                             | 65                               | 20                                | 23                              |
| <b>Adilabad</b> | <b>53</b>                      | <b>56</b>                        | <b>15</b>                         | <b>26</b>                       |
| Nizamabad       | 45                             | 55                               | 16                                | 22                              |
| Medak           | 42                             | 51                               | 13                                | 20                              |
| Mahbubnagar     | 41                             | 48                               | 12                                | 23                              |
| Khammam         | 45                             | 48                               | 11                                | 24                              |

|                                 |           |           |           |           |
|---------------------------------|-----------|-----------|-----------|-----------|
| Nalgonda                        | 54        | 42        | 8         | 25        |
| Warangal                        | 50        | 40        | 7         | 21        |
| <b>Karimnagar</b>               | <b>38</b> | <b>38</b> | <b>8</b>  | <b>24</b> |
| <b>TELANGANA</b>                | <b>45</b> | <b>49</b> | <b>11</b> | <b>23</b> |
| <b>Source:</b> www.nrega.nic.in |           |           |           |           |

Under MGNREGA, households' coverage is highest in Nalgonda (54 percent), Adilabad (53 percent) and Warangal (50 percent) where it is more than the state average of 45 percent. The households' coverage seems to be less in Rangareddy, Mahabubnagar and Medak districts which are located quite adjacent to the Greater Hyderabad Municipal Corporation (GHMC); and in Karimnagar district when compared to other districts. Possibly, urban proximity could be one of the reasons for less demand for MGNREGA employment, since people tend to migrate to urban places for employment with higher wages.

MGNREGA has provided the highest number of employment days in the districts like Rangareddy, Adilabad, Nizamabad and Medak (**Table: 3**). Average employment given per household is maximum in these districts. The employment generation is very less in Karimnagar, Warangal and Nalgonda districts. Among the districts, household coverage and average employment are moving in opposite direction. It has provided more employment in the districts like Rangareddy, Nizamabad, Medak, Mahabubnagar and Khammam where the households' coverage is so poor. On the other hand, employment provision is minimum in Nalgonda and Warangal districts where households' coverage is relatively high. These two districts are quite familiar to farmers' suicides in Telangana state. Unfortunately, the MGNREGA has provided less employment for participatory households in those districts. It is an absolute failure of the MGNREGA as it couldn't provide employment assurance to the rural poor in the regions where the agrarian crisis is severe. Both coverage and employment generation are minima in Karimnagar district which is agriculturally better off. **Table: 4** clearly illustrates that MGNREGA employment generation has increased from 2006-07 to its maximum during 2009-11 and started declining thereafter in all the districts in the state.

**TABLE: 4 DISTRICT-WISE MGNREGA HOUSEHOLD EMPLOYMENT (2006-16)**

| <b>DISTRICT</b>                 | <b>2006-07</b> | <b>2007-08</b> | <b>2008-09</b> | <b>2009-10</b> | <b>2010-11</b> | <b>2011-12</b> | <b>2012-13</b> | <b>2013-14</b> | <b>2014-15</b> | <b>2015-16</b> |
|---------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Adilabad                        | 35             | 53             | 54             | 78             | 63             | 58             | 67             | 55             | 48             | 46             |
| Karimnagar                      | 26             | 38             | 46             | 63             | 40             | 34             | 32             | 35             | 35             | 36             |
| Khammam                         | 32             | 49             | 54             | 65             | 47             | 53             | 54             | 48             | 39             | 36             |
| Mahabubnagar                    | 26             | 43             | 57             | 62             | 57             | 59             | 57             | 39             | 37             | 44             |
| Medak                           | 29             | 54             | 52             | 66             | 61             | 53             | 49             | 45             | 41             | 58             |
| Nalgonda                        | 22             | 35             | 41             | 58             | 49             | 46             | 53             | 42             | 38             | 35             |
| Nizamabad                       | 27             | 50             | 56             | 78             | 82             | 46             | 53             | 46             | 44             | 66             |
| Rangareddy                      | 53             | 53             | 66             | 82             | 61             | 75             | 60             | 67             | 56             | 72             |
| Warangal                        | 28             | 30             | 39             | 55             | 47             | 44             | 44             | 39             | 33             | 37             |
| <b>AVERAGE</b>                  | <b>31</b>      | <b>45</b>      | <b>52</b>      | <b>67</b>      | <b>56</b>      | <b>52</b>      | <b>52</b>      | <b>46</b>      | <b>41</b>      | <b>48</b>      |
| <b>Source:</b> www.nrega.nic.in |                |                |                |                |                |                |                |                |                |                |



The average days of employment and share of 100 days completed households both are moving in the same direction. The percentage of households who received 100 days under MGNREGA is highest in districts where maximum employment was given in rural areas. This proportion is highest in Rangareddy (20 percent) and lowest in Warangal district (just 7 percent). There are no major differences in work completion rate among the districts. At the district level, work completion varies between 20 to 26 percent for the period of 2006-16.

### Statistical Relationship between Some Indicators:

A correlation matrix is estimated to observe the behavioural relationships between the different variables across the districts. The variables that are included while computing the matrix are, namely household's coverage, employment days, 100 days completed households, work completion rate and expenditure. In general, the expected relationship between the variables is positive and highly significant. The MGNREGA performance would expect to be better in regions where coverage, employment, asset creation and expenditure is high. But, empirical results are not consistent with the statement as shown in the **Table: 5**. One should expect that the relationship between households' coverage and employment generation would be statistically significant and positive. Contradictorily, households' coverage is negatively correlated with average employment (-0.37) and 100 days completed households (-0.43). On the other hand, expenditure is negatively associated with employment (-0.60); but it is positive, in the case of households coverage (0.80). From this result, we can conclude that MGNREGA provides less employment to the large number of households who demanded it, perhaps, due to financial constraints.

| <b>TABLE: 5 CORRELATION MATRIX FOR SOME MGNREGA INDICATORS</b> |                           |                           |                                      |                             |                    |
|--|---------------------------|---------------------------|--------------------------------------|-----------------------------|--------------------|
|  | <i>Household Coverage</i> | <i>Average Employment</i> | <i>100 days Completed Households</i> | <i>Work Completion Rate</i> | <i>Expenditure</i> |
| Household Coverage   | 1                         |                           |                                      |                             |                    |
| Average Employment   | -0.37                     | 1                         |                                      |                             |                    |
| 100 days Completed Households                                  | -0.43                     | 0.99                      | 1                                    |                             |                    |
| Work Completion Rate   | 0.32                      | 0.03                      | 0.00                                 | 1                           |                    |
| Expenditure  | 0.80                      | -0.60                     | -0.65                                | 0.28                        | 1                  |

**Source:** Computed with the data taken from MGNREGA Official Portal.

Since the share of wage is very high, expenditure's association with work completion rate is so weak. The correlation between work completion rate and employment generation is extremely poor and negligible (0.03). It confirms that assets creation is neglected in the process of employment generation under MGNREGA. Is MGNREGA being implemented in the same lines of 'playing with mud' (Ghose, S. 2008)? Probably, lack of peoples' ownership could be one of the reasons for poor asset creation under MGNREGA along with other reasons. If assets were not created by the MGNREGA, it would be a complete failure of it and wastage of financial resources as well. Therefore, the state should take the initiative for generating durable and sustainable assets in the process of employment generation under MGNREGA. Finally, the estimation results confirm that the MGNREGA performance is not impressive.

**Index of MGNREGA Performance (IMP):**

To judge the MGNREGA performance across the districts, we built an index taking some important indicators such as rural household coverage, women participation, average household employment, 100 days completed households, funds utilisation, wage rate and work completion ratio. This index is computed by using Mandira Sharma's methodology (2010) such as,

$$IMP = 1 - \frac{\sqrt{(w_1 - dHC)^2 + (w_2 - dPW)^2 + (w_3 - dAE)^2 + (w_4 - dHH)^2 + (w_5 - dWC)^2 + (w_6 - dAW)^2 + (w_7 - dEX)^2}}{\sqrt{(w_1^2 + w_2^2 + w_3^2 + w_4^2 + w_5^2 + w_6^2 + w_7^2)}} \quad (1)$$

Whereas,

dHC = dimension value of Proportion of Rural Households Covered,

dPW = dimension value of Proportion of Person-days given for Women,

dAE = dimension value of Average Employment days per Household,

dHH = dimension value of Proportion of Households Completed 100 days,

dWC = dimension of Proportion of Works completed,

dAW = dimension value of Average Wage cost per Person, and

dEX = dimension value of Expenditure spent.

For this index, dimension values are calculated by using the formula (2). The dimension value measures the district's achievement in the  $i^{th}$  dimension of the MGNREGA performance. A weight  $w_i$  such that  $0 \leq w_i \leq 1$  is attached to the dimension  $i$  which indicates the relative importance of the dimension  $i$  in the quantifying performance of the MGNREGA.

$$d_i = w_i \frac{A_i - m_i}{M_i - m_i} \quad (2)$$

Where,

$w_i$  = Weight attached to the dimension  $i$ , ( $0 \leq w_i \leq 1$  and  $\sum w_i = 1$ )

$A_i$  = Actual value of dimension  $i$ ,

$M_i$  = Upper limit for dimension  $i$  and

$m_i$  = Lower limit for dimension  $i$ .

In Iyengar and Sudarshan's method, the weights are assumed to vary inversely as the variance over the regions in the respective indicators (Iyengar and Sudarshan, 1982). The weight  $w_i$  is determined by,

$$w_i = \frac{k}{\sqrt{\text{Var}(y_i)}} \quad (3)$$

Where 'k' is a normalising constant such that,

$$k = \left[ \sum_{i=1}^n \frac{1}{\sqrt{\text{Var}(y_i)}} \right]^{-1}$$

The MGNREGA performance index is calculated by the formula (4),

$$IMP = 1 - \frac{\sqrt{(0.06 - dHC)^2 + (0.09 - dPW)^2 + (0.05 - dAE)^2 + (0.09 - dHH)^2 + (0.20 - dWC)^2 + (0.08 - dAW)^2 + (0.45 - dEX)^2}}{\sqrt{(0.06)^2 + (0.09)^2 + (0.05)^2 + (0.09)^2 + (0.20)^2 + (0.08)^2 + (0.45)^2}} \quad 4$$

The index of the MGNREGA performance is given the different order in rankings of the districts in the states when compare to the table: 3 which is based on only five indicators such as households coverage, average employment, 100 days completed and work completion ratio. But, computed index by taking all the seven indicators together is given some different picture in the MGNREGA performance in the state as shown in the table: 6. The districts like Nalgonda, Adilabad and Mahabubnagar are listed in top 3 ranks with better performance in the state. Whereas the districts like Rangareddy, Medak and Nizamabad are listed from the bottom with poor performance in the MGNREGA implementation.

| <b>TABLE: 6 INDEX OF MGNREGA PERFORMANCE (2006-16)</b>  |                    |             |
|---|--------------------|-------------|
| <i>District</i>   | <i>Index Value</i> | <i>Rank</i> |
| Nalgonda  | <b>0.288</b>       | <b>1</b>    |
| Adilabad  | <b>0.252</b>       | <b>2</b>    |
| Mahbubnagar   | <b>0.252</b>       | <b>3</b>    |
| Khammam   | <b>0.198</b>       | <b>4</b>    |
| Karimnagar  | <b>0.177</b>       | <b>5</b>    |
| Warangal  | <b>0.176</b>       | <b>6</b>    |
| Nizamabad   | <b>0.174</b>       | <b>7</b>    |
| Medak   | <b>0.138</b>       | <b>8</b>    |
| Rangareddy  | <b>0.066</b>       | <b>9</b>    |
| <b>Source:</b> Computed with the data taken from MGNREGA website (Telangana) and Census 2011. |                    |             |

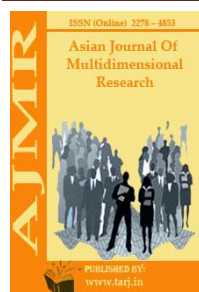
## CONCLUSION:

Telangana is one of the moderately performing states in the implementation of MGNREGA in the countryside. The employment generation is relatively better than the national average in the state. But, the same trend continues in employment generation and asset creation over a period of time. Under MGNREGA, households' coverage, employment generation and work completion rate have been continuously declined after reaching to a point. There is an inverse relationship between households' coverage and employment generation among the districts. The employment generation is not accompanying with assets generation, and most of the works were left incomplete as the amount spent on the material is always less than stipulated proportion. Hence, the state should take the issue of asset generation seriously to create durable and sustainable assets along with employment generation under MGNREGA. In Telangana, there are wide variations among the districts as far as MGNREGA performance is concerned. As per estimated performance index, the districts like Nalgonda, Adilabad and Mahabubnagar are performing well in terms of MGNREGA implementation, its performance is relatively poor in the districts like Rangareddy, Medak and Nizamabad. From a decade of experiences in Telangana, the

performance of MGNREGA is not satisfactory as it couldn't provide more employment in economically backward districts, where it is important.

## REFERENCES

- Ambasta, P., Mihir Shah, & P S Vijaya Shankar (2008), "Two Years of NREGA: The Road Ahead", *Economic and Political Weekly*, Vol. 43, No. 8, 41-50.
- CAG (2007), "Draft Performance Audit of Implementation of National Rural Employment Guarantee Act", Comptroller & Auditor General, Government of India, New Delhi.
- Desai, S., PremVashishtha, & Omkar Joshi (2015), "Mahatma Gandhi National Rural Employment Guarantee Act: A Catalyst for Rural Transformation", National Council for Applied Economic Research, New Delhi.
- Dreze, J., & Reetika Khera (2009), "The Battle for Employment Guarantee", *Frontline*, Vol. 26, No. 01.
- Galab, S., E. Revathi & P. Prudhvikar Reddy (2009), "Farmers' Suicides in Andhra Pradesh", In D.N. Reddy & Srijit Mishra (Eds.), *Agrarian Crisis in India*, Oxford University Press, New Delhi.
- Ghose, S. (2008), "The Idiocy of urban thinking", *Hindusthan Times*, February 14.
- Government of India (2005), "The National Rural Employment Guarantee Act", Gazette of India, 7 September, Ministry of Law and Justice, New Delhi.
- Government of India (2005), "The National Rural Employment Guarantee Act 2005 (NREGA)-Operational Guidelines", Ministry of Rural Development, New Delhi.
- Government of India (2012), "MGNREGA Sameeksha: An Anthology of Research Studies on the Mahatma Gandhi National Rural Employment Guarantee Act 2005 (2006-2012)", Ministry of Rural Development, New Delhi.
- Government of India (2014), "Mahatma Gandhi National Rural Employment Guarantee Act, 2005: Report to the People", Ministry of Rural Development, New Delhi.
- Government of Telangana (2015), "Reinventing Telangana The First Steps: Socio Economic Outlook - 2015", Planning Department, Hyderabad.
- Hirway, I. (2010), "NREGA After Four Years: Building on Experiences to Move Ahead", *Indian Journal of Labour Economics*, Vol. 53, No. 1, 113-135.
- Indrakant, S. (2015), "Performance of MGNREGS in Andhra Pradesh and Telangana", Paramount Publishing House, Hyderabad.
- Iyengar, N.S. & P. Sudarshan. (1982). A Method of Classifying Regions from Multivariate Data. *Economic and Political Weekly*, 17(51), December 18: 2047-2052.
- Sharma, M. (2010). Index of Financial Inclusion. Discussion Paper 10-05, Centre for International Trade and Development, School of International Studies, JNU.
- Subrahmanyam, S. (2002), "Regional Disparities in Andhra Pradesh Agriculture", In Y.V. Krishna Rao & S. Subrahmanyam (Eds.), *Development of Andhra Pradesh: 1956-2001 A Study of Regional Disparities*, N.R.R. Research Centre, Hyderabad.



## ANATOMY OF ADULTERY LAW

Sinta Umpo \*

\*Research Scholar,  
Arunachal University of Studies,  
INDIA.  
Email id: sentapo@gmail.com,

---

### ABSTRACT

*The Constitutionality of Adultery Law has been challenged in Supreme Court at the time of writing of this paper. The attempt has been to justify as to whether the adultery law, which is considered to be too medieval ought to be declared ultra-vires or it should remain as a provision in the law books. Attempt has been to make a proper analysis over this law so as to enable the Judiciary and the Legislature with certain observations which holds significance in relation to this area. The case study methodology has been adopted in understanding the perspective of the Court. The researcher finds that the adultery law in present form is archaic and treats women as a chattel of her husband. Nevertheless it's also found that should adultery law be given requisite amendments as suggested in main manuscript, then it would certain benefit the public welfare and specifically the emancipation of the women class.*

**KEYWORDS:** Adultery, Woman, Consent, Right to Privacy.

## INTRODUCTION

Law should be a living document. It should address the issues of legal implication taking into account the current scenario with the objective of providing greater and better redress to problems posed and thus achieving better standard of statutory provisions. The need of the present times is upon one such issue viz. the adultery law. The adultery law as provided for under IPC is contemplated to have run its due course. The present paper endeavours to analyse and understand the statutory framework of Adultery Law provision, so as to provide with suggestions for necessary amendments or any other alternatives.

Foremost, there are certain 'general questions' which will be addressed in relation to adultery law.

- ❖ What is the interest of the State in declaring the act of two consenting parties as an offence?
- ❖ Is the act of sexual intercourse a facet of right to privacy?
- ❖ Can sanctity of marriage be maintained under the threat of criminal prosecution?
- ❖ Should law include woman as abettor or should it remove the adultery law altogether?

## HISTORICAL PERSPECTIVE

Historically the adultery law finds a mention in Code of Hammurabi and also in seventh commandment. This provision was also used by Henry the VIII to get rid of his wife, Catherine Howard. In early times the adultery provision had wider application, it was even applied between man (married or unmarried) and unmarried woman, thus not confined to man and married woman.

Adultery was seen as detriment to sacred institution of marriage. Thus in R v. Mawridge, the act of adultery was held to be a partial defence for murder. The judgement observed:

*"Where a man is taken in adultery with other man's wife, if the husband shall stab the adulterer or knock out his brains this is bare manslaughter: for jealousy is the rage of a man and adultery is the highest invasion of the property."*

In 1847, the Law Commission was given the responsibility of drafting a new Penal Code for India. The societal condition at the times of drafting adultery law was primarily patriarchal in nature. Also at this point of time polygamy was deeply rooted in the Indian Society. The wives were therefore often deprived of the love and care of husband. Therefore such wives could be often induced into any advances of such a person and thus they would engage themselves in extra marital relations. Adultery law therefore essentially was to prohibit the advances of such man to wife of another.

The provision of adultery was enacted with the added presumption prevailing among Indians at that period of time that on marriage the wife's personality merged with that of her husband, thus seemingly becoming property of the husband. This assertion further gains ground as the 'consent' of the husband absolves the offence as the Sections' primary concern is not to criminalize the sexual relations outside the marriage but rather to put an end to infidelity of the wife 'without the consent of her husband who owns her'.

However the Law Commission rendered only the male as liable for the adultery. It was done after looking at the dismal condition of women, and considering the fact that it was law's duty to protect them. A married woman had not independent existence in the eyes of law and therefore



she was supposed to be innocent victim, and thus not punished. The law treats woman to such act not as offending party and thus criminal sanction is against such husband only.

At this point it becomes necessary to understand what the law exactly provides- Sec 497 of I.P.C.

—  
*“Whoever has sexual intercourse with a person who is and whom he knows or has reason to believe to be the wife of another man, without the consent or connivance of that man, such sexual intercourse not amounting to the offence of rape, is guilty of the offence of adultery, and shall be punished with imprisonment of either description for a term which may extend to five years, or with fine, or with both. In such case the wife shall not be punishable as abettor.”*

Few questions that arises from this provision are as follows

- ❖ Is wife, a property of husband?
- ❖ Why a man is punished, while woman is not, for same act?
- ❖ Does it invade the right of privacy of a person to have inherent bodily right over his own body?
- ❖ Will criminalisation help in structuring the social behaviour?

Then again Sec. 198(2) of Cr.P.C provides as to who can initiate a case-

*‘...no person other than the husband of the woman shall be deemed to be aggrieved by any offence punishable under section 497 or section 498 of the said Code: Provided that in the absence of the husband, some person who had care of the woman on his behalf at the time when such offence was committed may, with the leave of the Court, make a complaint on his behalf.’*

It is explicit clear from reading of Sec. 198(2) of Cr.P.C that it allows the initiation of the criminal proceedings on the instance of the husband of the adulteress but the wife of the man party to it cannot file a complaint. Thus it arises the question-

- ❖ Is marriage a sacred institution for husband only?
- ❖ If husband is aggrieved by wife’s act, why shouldn’t the wife of husband in adultery be equally aggrieved?

It is clear from the combined reading of above provisions that the ‘Adultery’ essentially involves sexual intercourse by a person with a married woman. It is a ‘Consensual Sex’ between the two persons and thus it does not come within the domain of ‘Rape’. Meaning thereby, if it involves absence of consent of woman, then it would amount to Rape and not adultery.

However for a sexual act to be included in expression Adultery, there must be a ‘knowledge or a reasonable belief’ on the part of such person that such women with whom he has sexual intercourse is wife of another person. In absence of such ‘knowledge or a reasonable belief’ it would not amount to adultery.

The question which has been laid before the Hon’ble Supreme Court is whether the Adultery law is Constitutional or not. This question is raised on the ground that the adultery law is void as it is inconsistent with Article 14, 15 and 21 thus is in breach of A/13 of Indian Constitution.

The second Law Commission of independent India which was given the choice to make its opinion was in favour of continuing with the same. Similar stand was taken up by forty second Law Commission. Nevertheless it sought for neutral application of law on adultery for both

husband and wife. However there was a dissent from one of its member, Anna Chandy, who opined that it was time to consider if adultery law was in tune with the present day notion of status of woman in marriage.

### **COURT OBSERVATION**

The challenge before the court is that since the law is not giving equal treatment to two people situated equally in equal circumstance, the law should be declared ultra vires.

The earliest instance of debate over adultery law as being inconsistent with Constitution was made in the case of Yusuf Abdul Aziz vs. The State of Bombay wherein a contention was laid down before the Supreme Court that there was inconsistency between Sec. 497 and Art. 14 as it discriminated between a man and woman, making the former liable whereas later was only regarded as victim. And therefore since Sec. 497 was in vires of the Art. 14, it must be struck down. However the court upheld the constitutional validity of the said provision by observing that Sec 497 was protected by Art. 15(3) as it was made for the protection of the woman. It further held that sex was a sound classification although there cannot be discrimination on such accounts.

In Smt. Soumathri Vishnu v. UOI the court had upheld the constitutionality of the adultery law holding that despite the social scenario might have changed nevertheless the privilege to decide the policy of law was with the legislature and not the judiciary. The issue is before the court at the time of writing this article in the case of Joseph Shine vs. UOI.

In V Revathi v. UOI the petitioner contended on the inability of the wife to prosecute for act of adultery and thus classification was arbitrary. However the court was of the opinion that the act intends to punish the outsider who intrudes into the sanctity of the matrimonial home. Thus it does not arm the either of the spouse to hit each other with the weapon of criminal law. Hence neither of the spouse can prosecute the other for the offence of adultery and send him to jail. Therefore the court opined that the law was not arbitrary on the basis of discrimination towards the woman. The question as to why ‘outsider woman’ being unpunished while the ‘outsider man’ was prosecuted and punished was left unexplained.

### **ANTE-MORTEM OF ADULTERY LAW**

Among other things the inconsistency of the law is also so presumed because the adultery law provides husband of such wife in adultery with the right to prosecute the other person in adulterous act, however it does not give the same right to the wife’s husband. Therefore in essence, the woman can neither file a complaint of adultery nor can she be prosecuted as an offender. However all man she has sexual relationship would be liable for prosecution.

Thus if the wife gets involved in adulterous act, the wife can’t be prosecuted by the husband. Therefore although it is a same act, yet the wife is put on higher pedestal by the enactments. Moreover only a man who is a party to the offence of adultery is punished while the woman who participates in it is immunised from prosecution even as abettor. Thus it stereotypes that a woman is either always morally correct or that she is not capable of such immorality. Here, there’s no rational in different treatments for same offending acts. Marriage is an institution whose sanctity must be upheld by both husband and wife.

However one absurd rationale arising out of such a law is the fact that it does not amount to adulterous act if the consent of the wife’s husband is taken. Therefore the consent absolves the

offence. Therefore this law seemingly treats woman as a chattel. This amounts to gender biasness. The other observation arising out of the Sec. is that its significance is in protecting the sanctity of the marriage, however when the sexual intercourse is with the person who is not married, then it does not amount to an offence despite the fact that it affects the sanctity of the marriage.

The law therefore upholds no reasonable classification of having intelligible differentia and therefore should amount to arbitrariness on the part of the Adultery law. Interestingly the act of adultery is also a symptom of marriage breakdown. The 'present statute' providing criminal sanction for the adulterous act is based upon societal morality saturated on the premise that women is under the subordination of the man and therefore is a property of man.

The other contention is that adultery should be declared ultra vires as the act which is declared offence is committed by two adults with consent of one another. So the contention is whether a consenting act should be declared an offence at all.

### **DISPUTING THE DISPUTE**

After analysing the whole contentions placed, it is manifest that there is certainly a good ground for challenging the adultery law's constitutionality. However it would be necessary to have a look at the disputed provision and see as to whether there is any merit in retaining that law by necessary amendment. This course is preferable than directly discarding the law. This is so because it would save the judicious time of judiciary and also that of legislature too, in trying to re-enact it after it has been nullified, in case it was to be re-enacted.

The first reason as to why adultery law should be retained is so because despite there being a consent of the parties to the offending act, it also necessarily involves not merely the two consenting parties. Rather it involves injury to the third party also. It amounts to cruelty to the spouse of such consenting parties. Cruelty is also a ground for declaration for nullification of the marriage. Thus the rights of the third party must be taken into consideration.

Moreover, can it be said that sexual orientation which does comes within the scope of right to privacy also includes sexual adventurism with the wife of another? Such a proposition would be ill advised. However it is no one's case that if adultery law is nullified, everyone would involve in sexual adventurism. But certainly some would take the liberty too liberally.

Life as interpreted under Art. 21 means one that is of dignified existence. However it would be hard to make an assumption that expression 'Life' will include within it the preference of the married persons to invite oneself to sexual adventurism with the other persons spouse. Such liberty of interpretation would only invite havoc to society. Treating woman as property of man is antithetical to notion of dignified life, so is the adulterous acts which only furthers the bridge between two married spouses.

Although the sanctity of the marriage should not be made under threat of criminal prosecution, yet sometimes it becomes necessary. For eg. Demand for dowry, Harassment etc. are where a spouse is prosecuted for causing unnecessary pain, whether mental or physical. In adultery, the spouse of such adulterer is caused unnecessary inconvenience. So much so that adultery becomes a good ground for divorce.

The deletion of the law would only mean there would be absence of statutory provision enabling prosecution of consensual sex. Such an absence of law would leave the spouse of the consenting

party without any remedy in any such future events, for such a case cannot also be included within the expression 'rape'. Although it is a good ground for divorce, nevertheless the negative consequence of petition on ground of cruelty leaves little room for reconciliation as such petition is a direct move towards the divorce.

Should adultery law be deleted, then what should happen if the husbands connives with one another to have sexual intercourse with the wife of the other? In trying to provide equality by declaring the law ultra vires would do no good. It will only nullify a law whose intentions could only have been corrected. The better option therefore would be to bring an amendment to the said law.

### **WAY FORWARD**

It seems wise, from the above observations, to make an amendment to adultery law than to make it a dead letter. However such an amendment should be carried out by the legislation on its own, in immediate future, rather than waiting for the court to nullify the same. For it will only consume judicious time of the Court if the Parliament was to enact an amended provision after the full determination by the court. Moreover it is not a matter of dispute that the court cannot ask the parliament to enact a specific law, even via a writ of mandamus.

Such a course by the legislature is invited, so because, the court although can use the doctrine of severability to ensure that a part of the law minus the offending part remains, yet what is left would be impossible to be enforced without making alterations and modifications therein. Moreover such choice of words and expressions by judiciary thereby, to erect a valid law would very likely intrude into the legislative domain. Such a step is not welcomed. For although there is no strict separation of power yet the independence of all three organs is called for. The judiciary which holds its independence so close to his heart must not scramble with the independence of other equal co-ordinates.

Requirement at this point of time is to consider the amendment of this provision rather than declaring it nullity on the grounds of contravening the equality clause. Therefore taking all these facts into considerations it seems proper that the law should be amended rather than obliterated. Such an amended provision could read as follows-

*"Whoever has sexual intercourse with the spouse of any other person, not amounting to rape, is guilty of adultery"*

The amendment removes the expression '*without the consent*' for such an expression is derogatory and it involves moral turpitude and degrades the woman. This also uplifts the moral of the woman from the medieval notions about women being a property of her husband. This amendment also removes '*knows or has reason to believe*' so that such acts which intrudes into marriage of others must not escape by citing his lack of knowledge or reasonable belief.

Expression '*not amounting to rape*' should be incorporated so that it would make easier the work of the criminal prosecution in not confusing the adultery and Rape provisions. Thus where such sexual intercourse is forced or is obtained by playing fraud or is without consent would amount to rape and not adultery.

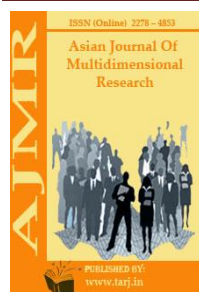
The amended provision as laid makes both the man and woman engaged in adultery liable for prosecution. The other amendment which is necessary is in regard to the standing of the wife as a

complainant. Changes should be brought in Sec. 198(2) so as to enable the wife of the spouse engaged in adultery to prosecute.

The un-amended Adultery law may seem particularly medieval, nevertheless the intentions of such a law is welfare oriented. The necessary amendment removes the discord and upholds the right of third parties thus the public policy of *'Ubi jus ibi remedium'* is preserved. There is no iota of doubt that adultery very clearly wrecks the matrimonial relationship. It becomes the responsibility of the State to ensure that such events do not injure the life of the third party. The adultery law is necessary more so because it ensures that adulterer does not commit the crime again. The intention of adultery law is for the well-being of the parties affected by it and not to punish the parties involved in adultery.

#### END NOTES

1. R v. Mawridge (1707)
2. Sudhir Mishra *'Should adultery be a crime?'* The Hindu Newspaper, Available at <https://www.thehindu.com/opinion/op-ed/should-adultery-be-a-crime/article22180770.ece>
3. V Revathi v. UOI1988 AIR 835
4. Divorce Sec. 13(1) of HMA, 1956
5. Yusuf Abdul Aziz vs. The State of Bombay
6. Smt. Soumathri Vishnu v. UOI1985 AIR 1618
7. M. Monir *'The law of Evidence'*
8. C.K. Thakker *'Ratan Lal and Dhiraj Lal's Indian Penal Code'*
9. K.D. Gaur *'Criminal Law- Cases and Materials'*



## HIERARCHICAL PATTERN AND DISTRIBUTION OF SERVICE CENTRES AND IT'S PROBLEMS: A CASE STUDY OF MUZAFFARPUR DISTRICT

**Dr. Supriya\***

\*Post Doctoral Fellow,  
Icssr New Delhi,  
Department of Geography,  
Patna University, Patna, Bihar, INDIA.  
Email id: supriyavatsa52256@gmail.com

### ABSTRACT

*Regional planning is a process to achieving certain objective, goals in planned manner with utilizing human thought and action based upon their aspiration and their abilities in given space. The relevance of Growth Centre, service centre and its hierarchy approach have been accepted as a basis of planning unit selection in micro-regional plan for regional planning and integrated rural development since fourth five year plan. Service centre is accepted as an intermediate unit of planning between district and village. The present paper investigate hierarchical distribution of service centres and examine the existing problems for proper planning of rural development of the Muzaffarpur district of Bihar State. It also suggests some measures to achieve the goal of equity and sustainability of district. The entire work will be based on primary data and secondary source of information.*

**KEYWORDS:** *Service Centre, Hierarchy, Planning, Sustainability, Development*



## I. INTRODUCTION

Service centres play an instrumental role in the process of economic growth and regional development. They are like hierarchical foci in the pattern of connectivity, socio-economic interaction and moreover in the creation of socio-cultural mosaic for a satisfying level of the quality of life and happiness. Geographically, as Christaller (1933) and many others have stated, service centres are located at the most optimal central place and also developed some kind of geometric model of connectivity, functional flow and morphological growth. Since the 'Sixth Five Year Plan', India has been emphasizing over the planning and development of the service centres. Mark Jefferson (1931) has viewed that city do not grow themselves, Countryside's set them up to do the task that must be performed in central place. Central places in general perform secondary and tertiary activities on a large scale and maintain a system of interaction with the threshold population. This interaction and function as an instrument of survival and sustainability of central place in a region. Every central place cannot perform all kinds of secondary and tertiary activities some centres having greater amount of centrality became capable to perform larger number of services. Hence, central place emerge in different orders and types. In most of the cases the term central places and service centres are used interchangeably. Infact service centres perform all kinds of delivery to the inside and outside consumers at lower hierarchy level. Central place performs identical functions, e.g., if centrally located villages perform some kinds of goods and delivery services then that is a service centres. But locationally it is also a central places but of higher order. Centrally located places perform the function of economic production, large scale transportation and many other functions which cannot be perform as lower order services. However, tending of services and delivery of goods are common in all service centres.

Muzaffarpur district of Bihar is a case of poverty laden district with large scale illiteracy, particularly among females, unemployment and economic backwardness. Although, Muzaffarpur is the third largest urban centre of Bihar, but has not functionally been much impressive as a higher order service centres. There may be many reasons but one important reason that is adherent is the mismanagement and un-matched linkages growth and functioning of service centres. Infact, this is not only the case with Muzaffarpur district but also with most of the backward districts of Bihar. The society is gradually becoming restless due to emerging global connectivity and growing consciousness of the people entitled to certain services. In such circumstances, this kind of micro level service centre study is quiet relevant and essential for better development and planning of region. Muzaffarpur district has been selected for the case study and findings of this research paper may be of greater applicability for planners, and academicians.

## II. OBJECTIVES

The present paper deal with following objectives:

- To determine spatial distribution pattern of service centers in hierarchical arrangement in study area.
- To examine the existing problems for proper planning of rural development.
- To suggest some measures to achieve the goal of equity and sustainability of district.

### III. METHODOLOGY

The paper based on statistical methodology. The weighting technique and modified deviation approach have been used for determination of hierarchy and distribution of service centres in muzaffarpur district. There are 130 service centres (where 126 villages and 4 towns) is traced in the district with its population threshold. After that 54 services belonging to different socio-economic functional groups have been considered for recognizing service centre and its hierarchy in the study region. These services or central function have been kept into ten major service groups. They are Administrative Services; (ii) Educational Services (iii) Medical Services (iv) Veterinary Services; (v) Banking Services; (vi) Communication Services; (vii) Transport Services; (viii) Commercial Services; (ix) Agriculture Services and (x) Social Services. These all groups of services had given their weightage value with their functional importance in the region. On the basis of the weightage technique, the 130 qualifying service centres in the study area were classified into seven distinct hierarchical levels with the help of the standard deviation (S.D) formula. The formula is

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N}}$$

For determining distributional pattern in region nearest neighbor statistics has been used. All resultant value is represented through table and maps with help of MS office and ARC GIS software. Problems are examined empirically and investigating through questionnaire from different service centres.

### IV. SOURCES OF DATA & MAPS

The present paper is based on primary and secondary data. At first level identification of service centers had been done with help of district census data of 2001 and 2011. Primary data had been collected through random purposive sampling method. A detail questionnaire survey is done for all identified service centres to determining hierarchy, distribution and its problems. Base maps are digitized with the help GIS software which was taken from 'Bihar Administrative Atlas of 2001'.

### V. REVIEW OF LITERATURE

The review of literature provides chronological analysis and conceptual background for the present study or research. The concept of service centre and hierarchy of settlement have widely been accepted for integrated development and decentralized planning approach to provide welfare programmes to grass root level by different scholars and social scientists of different discipline. In geography a lot of studies have been done in the field of the concept and planning of service centres. The idea of hierarchy of settlement and service centre concept is traced into central place concept (Christaller) and 'Growth pole concept' (presented by Perroux and modified by Boudeville and 'Growth Centre' (R.P. Mishra) concept as a modified model of Growth pole in Indian perspective. Hence, some significant work have been summarized and reviewed, which constitute the basic philosophy and lays a foundation for present topic of research paper.

The root of the service centre concept is borrowed from the central place concept which helped in the identification and ordering of settlements to its functional relevance in a space or spatial system. Walter Christaller (1933), and August Losh (1954) are the pioneers of the central place study. Many sociologists, economists and geographers like, Dickinsion (1934), Schilier (1937),

Smails (1944), Galpin, Koble and Brooner (1946), Green (1950), Bresslo (1953), Clark and Evance (1954), Carter (1955), Gould lound (1956), Philbrick (1957), I. Caurrthars (1957), Berry & Garrison (1958), Ullman (1960), Thomas (1961), King (1962), Dacey (1962), Gelis (1963), Groove and Husbar (1964), Olsson and Persson (1964), Bloome (1963) and Hagget (1965) have also contributed in the development of the idea of centrality and hierarchy of settlement system.

The Pioneering work done in this field was that of Walter Christaller (1933). His work is known as 'central places of south Germany'. The work was translated into English by C.W. Baskin. Baskin (1955) translated as central places that provide services to its surrounding areas termed as 'central functions' or 'central services'. A central place normally performs a certain number of functions, not only for host settlement but also for outside nearby settlements. Christaller has stated, service centres are located at the most optimal central place and also developed hexagonal model of connectivity, functional flow and morphological growth. The intensity of interaction between settlements depends on the nature of the central functions or services. Christaller measured this interaction with the help of the centrality of function. He explained with the number of telephone connections and its relation to population density. After Christaller several studies have been done in the field of determining central places with the help of functional centrality, range of goods and threshold population. In most of the cases, common functional centrality leads to act as a central place, or a service centre.

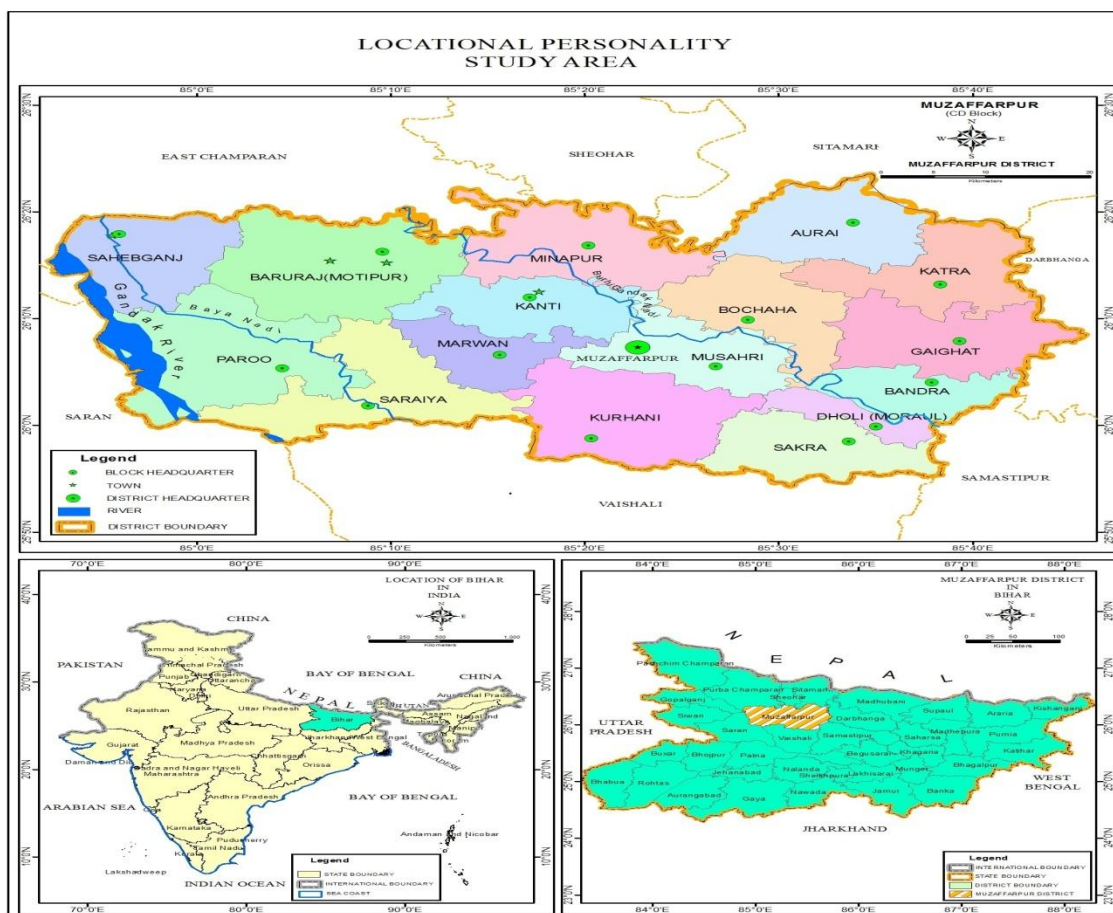
Fedrick Perroux (1955) gave idea of Growth Pole theory where the basis of the theory is the principle of central place. The Spatial Diffusion Theory (Haggerstand) on economic space and Boudeville (1976) modified theory on geographical space are also relevant work in this regard. R.P. Mishra modified the growth pole theory in Indian perspective, calling it growth centre theory'. It, therefore, becomes evident that service centre theory derives conceptual strength from the 'central place theory,' 'Spatial Diffusion Theory,' 'Growth Pole' and 'Growth Foci' Models. The service centre concept received attention in India after 1950. Indian scholars have followed the basic ideas and concept of western scholars. However, there has been a modification by Indian scholars in the concept of micro-regional planning.

The galaxy of scholars who worked on Indian scenario are R.L. Singh (1956), O.P. Singh (1958), K.N. Singh (1962), S. Wanmali (1963), K.V. Sundram (1964), S.P.N. Jaiswal (1966), S.M. Singh (1966), Venugopal (1968), Har Parsad (1969), A.B. Mukharjee (1970), L.K. Sen (1971), R.P.B. Singh (1974), S.C. Bansal (1975), R.P. Mishra (1979), J. Singh (1979), R.B. Mandal (1980), B.L. Sinha (1982), R.B.P. Singh (1984), R.N. Thakur (1985), N. Sharma (1989), H.Singh (1994) and many others. Most of the Indian scholars have viewed that the social, economic, political and environmental conditions have been different in India and due to that classical models cannot be applicable. Prof. R.P. Mishra, Dr. Jagdish Singh, Prof. Sundram, L.S. Bhat and L.K. Sen have studied the concept taking district as a unit of investigation. Each one has worked in different geographical milieu. No one except R.N. Thakur has worked in the context of North Bihar or flood prone plain milieu. Hence, the present work its own relevance and findings may attract attention of eco-friendly planners and sustainable development strategist.

#### IV. THE STUDY AREA

Geographically Muzaffarpur district is located at 25°54'to 26°23'North latitude and 84°53' to 85°45' East longitude (fig 1). Bagmati, Gandak, Burhi Gandak and Baya are important rivers, which cause flood in the district almost every year. Muzaffarpur district, "The Land of Litchi" was created in 1875 for administrative convenience and was named after Muzaffar khan, an

‘Amil’ of British dynasty. It was further split-up into Vaishali, Sitamarhi, Sheohar and Muzaffarpur for administrative convenience.



**Figure 1: The Study Area**

The district is spread over an area of 3172 sq km, having a population of 4.8 million (Census 2011). Muzaffarpur district holds 4.6 percent of state population with 27.54 percent of decadal growth rate. Literacy rate is remarkable in the district which has rises from 48 to 66 percent and it is also above than state average 63.82 percent. The female literacy has also achieved remarkable growth from 35.2 percent to 56.82 percent. The district shares high proportion of rural population and agriculture is backbone of its economy. It is a one of the most important centre of industry and trade in Bihar and Muzaffarpur town is the focal point of not even in state but in entire North Bihar.

There are two subdivisions and 16 blocks. The district has 1796 revenue villages and 387 Panchayats. Marwan and Muraul are the newly created blocks. Muzaffarpur is the central town and district and sub divisional headquarter. Kanti, Motipur and Sahebganj are other town of the district. Muzaffarpur is the head quarter of Trihut commissary at present. There are only four towns which provide minimum range of functions to its rural surrounding. Out of 1725 inhabited villages only 1021 are electrified, 1423 have primary schools, 104 have high schools, 26 have colleges; 526 having medical facilities; 473 have post and telegraph services; 602 have communication services, 361 have hats and mandies with 3 regulated market, 763 village approached with paved road 216 have bus services. There are 198 branches of different banks

and cooperatives in district. Under this situation there is need to determine functional importance of service centres in context to hierarchical approach.

## V. RESULT & DISCUSSION

**Hierarchy Levels in the Study Area:** The spatial pattern of distribution and ranking of service centres provide some views to the existing pattern of settlement hierarchy and space relations. The concept of hierarchy is a dynamic one and the different levels of nodality expressed through the convergence of people and goods provide basis for integrated area development planning. The hierarchical system of recognized service centres have been calculated through weighting technique. It has been applied to provide relative weightage to different services which finally helped in the ordering of the hierarchy of service centres in Muzaffarpur district. The principle in adopting the technique is that scarcity increases the importance of functions in terms of centrality. Kyastha S.L. and Mishra, SP (1981) and R. B. P. Singh (1985) used this technique in his studies. As such, the weight of the function will be high, present analysis used total population of study area as it is not the total number of settlements, which counts but it is population which is prime factor as every service is directed to fulfill the requirements of the total population. The used techniques for weighting the function are as follows:

$$W_i = \frac{\sqrt{P}}{N}$$

Where,  $W_i$  = Awarded score value (centrality value with reference to the  $i$ th function)

$P$  = Total Population

$N$  = No. of occurrence of a particular service in the study area.

Population has been rooted over to get relative value. At the same time the awarded score value will not be very high. The mean and standard deviation of centrality index have been calculated and seven orders of service centres have been recognized. In this case the mean value is 1 and the S.D value is 0.64. as the nature of information and extent is abnormality in higher class (Mean + 7SD) the maximum value is 5.28 and minimum value is 0.39 and there is no centre in between Mean + 6SD to mean + 4SD, the classes is merged in higher order or 1<sup>st</sup> and 2<sup>nd</sup> order. Therefore, seven hierarchical classes have been recognized. Now, if we apply Christaller model (1937) of the size and distribution of central places based on marketing principle  $k=3$  system then we find that the study region has similarity between first and second order hierarchy class but afterward there is no similarity with the hypothetical observation and observed classes of service centres hierarchy. In Christaller model the frequency of occurrence of different levels of central places follows the progression from large to small as 1, 2, 6, 18, 55, 162, 486...and so on. Table no. 1 shows the comparative result of the hierarchy of service centres, and their observational detail. Identified order or level of hierarchical class have been kept into seven groups and formulate better service facilities and rural development planning in the study area. The hierarchy levels of service centres are given in table no. 1 and illustrated in figure no 1.

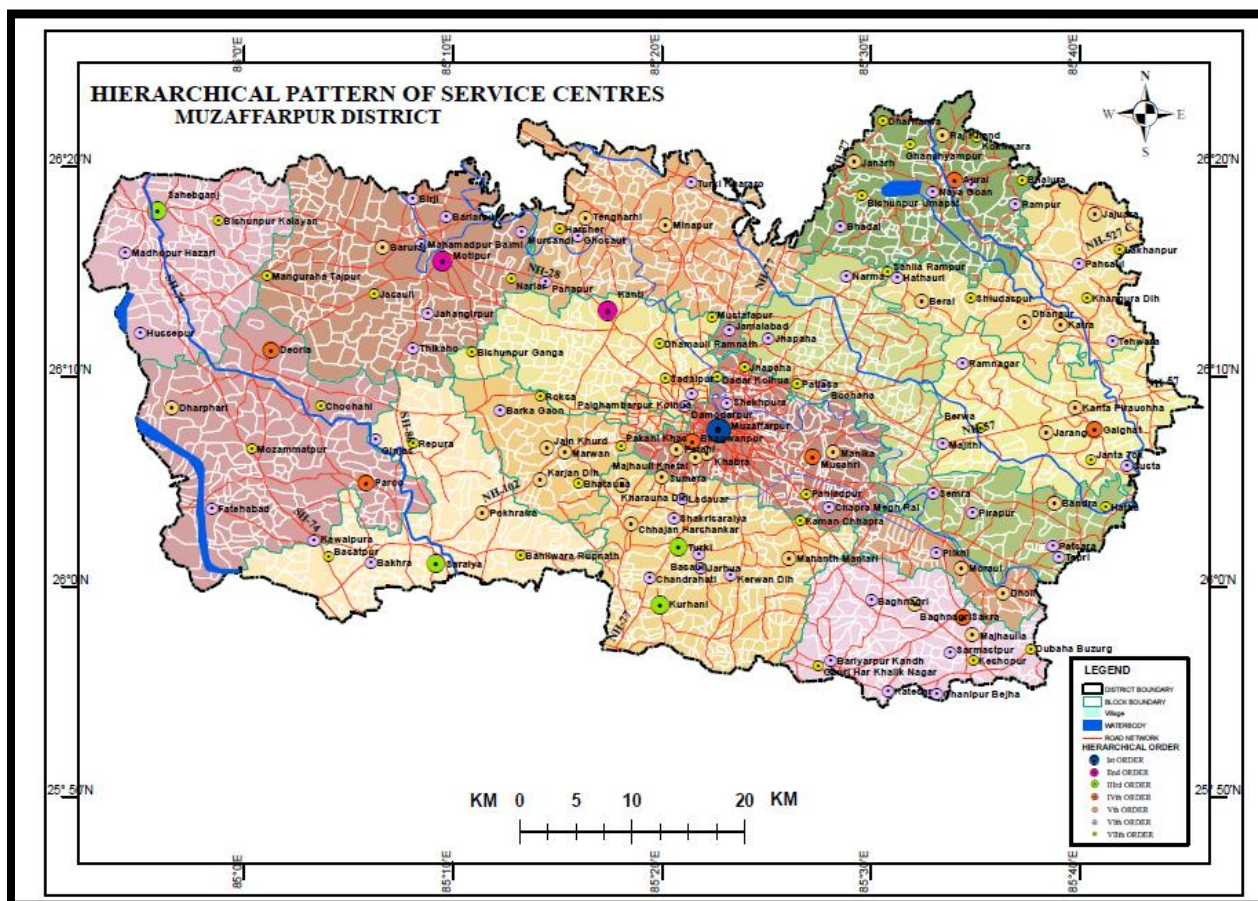


**TABLE 1: HIERARCHICAL ORDER OF SERVICE CENTRES IN MUZAFFARPUR DISTRICT**

| Hierarchical Order | Hierarchical Status           | Observed by SD Method | Observed Service Centres | Theoretical Observation | Name of Service Centre  |
|--------------------|-------------------------------|-----------------------|--------------------------|-------------------------|---|
| 1st Order          | Growth Centre                 | 3.27 - 5.50           | 1                        | 1                       | Muzaffarpur (M Corp.)   |
| 2nd Order          | Potential Growth Centre Point | 2.93 - 3.27           | 2                        | 2                       | Motipur (NA), Kanti (NA)  |
| 3rd Order          | Potential Growth Point        | 2.29 - 2.93           | 4                        | 6                       | Sahebganj (NA), Turki, Saraiya, Kurhani   |
| 4th Order          | Basic Amenities Centre        | 1.64 - 2.29           | 7                        | 18                      | Paru Khas, Deoria., Aurai, Gaighat, Mushari, Bhagwanpur, Shakra   |
| 5th Order          | Rurban Service Centre         | 1.00 - 1.64           | 28                       | 54                      | Baruraj, Dharphari, Pokhrai, Marwan, Karjan Dih, Minapur, Tengharhi, Janarh, Raj Khand, Katra, Jajuara, Berai, Dhanaur, Kanta Pirauchha, Jarang, Bandra, Moraul, Dholi, Khabra, Patahi, Majhauri Khetal, Manika, Mahanth Maniari, Chhajan Harshankar, Kharauna Dih, Sumera, Baghnagri urf Bishunpur Subas, Majhauria                                  |
| 6th Order          | Rural Service Centre          | 0.64 - 0.00           | 51                       | 162                     | Hussepur, Madhopur Hazari, Bariarpur, Birji, Mahamadpur Balmi, Thikaho, Mursandi, Jahangirpur, Fatehabad, Kawalpura, Bakhra, Ginjas, Jain Khurd, Barka Gaon, Kerwan Dih, Paighambarpur Kolhua, Damodarpur, Panapur, Ghosaut, Turki Khararo, Jhapaha, Karanpur, Narma, Rampur, Ratwara Bindwara Deoria, Naya Goan, Bhadai, Tehwara, Pahsaul, Hathauri, |



|           |                        |              |         |     |   |
|-----------|------------------------|--------------|---------|-----|---|
|           |                        |              |         |     | Majithi, Ramnagar, Patsara, Semra, Tepri, Pirapur, Pilkhi Gajpatti, Jamalabad, Shekhpura, Chapra Megh Rai, Shakrisaraiya, Chandrahati, Basauli, Jarhua, Laduar, Jagdishpur Bagnagri, Ghanipur Bejha, Katesar, Bariyarpur Kandh, Sarmastpur  |
| 7th Order | Village Service Centre | 0.34<br>0.64 | -<br>37 | 486 | Jasauli, Nariar, Manguraha Tajpur, Mozammatpur, Basatpur, Chochahi Chhapra Kashijha, Bahilwara Rupnath, Repura, Pakahi Khas, Bhatauna, Roksa, Dhamauli Ramnath, Bishunpur Ganga, Sadalpur, Mustafapur, Dadar Kolhua, Harsher, Sahila Rampur, Patiasa, Dharharwa, Kokilwara, Ghanshyampur, Ba sant, Bhalura, Lakanpur, Shiudaspur, Khangura, Berwa, Janta Tok, Hatha, Pahladpur, Jhapaha, Raghunathpur Madhuban, Gauri Har Khalik Nagar, Keshopur, Dubaha Buzurg |



**Figure 2: Hierarchical Distribution of Service Centre in Study Area**

**Hierarchical Pattern of Service Centres in Study Area:** The study area has seven successive orders of service centres which have been identified on the basis of centrality scale. The district has rural base with four town and the district headquarter is on the higher level of hierarchical pattern. All other central places and service centres are rural service centres. There distribution is highly uneven and followed the pattern of transport network distribution. The seven hierarchical orders are as follow:

- 1. First orders centre (Growth Centre):** The operational design for growth centre policy in India refers to such service centres which have been integrative growth generative at the same time. It is assumed that the threshold population would be ranging from 10 lakh to 20 lakh persons. There has also been minimum support for urban industrial infrastructure of the centre. Muzaffarpur town is in the first order of service centre with centrality index of 5.32 and achieved highest score of composite index with 134 providing, services of maximum number of identified central services (51). The city is in position to provide optimal location for growth of different type of functional activities like administration, education medical, recreational, trade and commerce with industrial base. The city has potential to grow as focal point of different agro-industrial development in not only in the study but also in North eastern part of Bihar. The city have also grow as main industrial complex zone of Bihar. There can also be developing certain social and cultural facilities for its higher hinter land.

2. **Second Order Service Centres (Potential Growth Centre):** The second order of service centres have been designated as Potential Growth Centre in the region. The centres have scored 2.93 to 3.27 centrality score. These are main towns which have different agro-industrial base. Motipur is the oldest town and second largest town in the study area which is known for its agrarian industrial economic base. It is large hinterland with agrarian economies. There have potential to grow different industries and reestablish the glory of sugar producing area in the region as well as in Bihar. Kanti is another town which have industries based on non-agriculture sector. Power station, chemical factories are the main features of the town. But there is also have potential of agro-economic development related to agro products of its hinter lands. Kanti and its sub-areas have developed as industrial gallery between Mahul to Kurhani with parallel to National highway-28 and North-eastern railway route.
3. **Third Order Service Centres (Potential Growth Centres):** There are four centres with 2.29 to 2.93 centrality score. Sahebganj has tuned into urban centre (constituting five villages) in 2011. These four centres have prominent market area of the region and also with some industrial development and potential to grow so. They may emerge as potential growth centre in near future with integrating development through urban-rural schemes executed properly.
4. **Fourth Order Service Centres (Urban Service Centre):** There are seven centre named Sakra, Mushari, Paru, Bhaganpur, Deoria, Aurai and Gaighat. Bhagwanpur and Sakra which having more urban facilities and still have rural status. Bhagwanpur is part of Muzaffarpur urban area and have provides some important functions to its rural and urban surrounding. They provide a range of twenty-four to twenty-nine functions. These are mostly block headquarters which performs important administrative educational, medical and marketing facilities to its lower order service centres.
5. **Fifth Order Service Centres (Rurban Service Centre):** There are twenty eight service centres which provide the range of functions between twenty-three to twenty central services. They may emerge as important service centres in future if integrated development of rural and urban facilities induced within these centres.
6. **Sixth Order Service Centre (Rural Service Centre):** There are fifty centres having character of rural service centres. They provide fifteen to thirteen services to its rural hinterland. These are Potential Service Centres which have developed as connecting point between higher and lower order of service centres in the study area.
7. **Seventh Order Service Centres (Village Service Centres):** There are thirty-seven rural service centres which have provides a range of ten to thirteen central functions to its rural surroundings. They serve population between 10,000 and 5,000 and such centres provide minimum services to its threshold population. These are also potential units for establish rural facilities which has accelerated development to its remote rural hinter lands.

**Distributional Pattern of Service Centres:** Distributional pattern of service centres in the study area is determined by spatial analysis of settlement placed as dispersed, clustered or compounds. The spacing of settlement in any area is governed by topographical characteristics, transport intensity, resource availability, trend of population growth, migration etc. The spatial pattern of settlement provide basic input for the organisation of service centres and selection of sites and unit for growth pole and other developmental works. Settlement pattern of the study area is not

only unplanned, but also a result of a sort of natural growth forced by its physical and cultural settings. Thus although they do not possess well defined shapes and there is considerable arrangements in both internal structural and external outline of village. These unorganized structures are resulted to the nature of site and cultural obliquity of Muzaffarpur district. Sites of the settlement is closely related to water bodies and agriculture practices as shapes of the fields, farming and cultural aspects like temple, mosque, roadways, cart, tracks etc. The security aspect has also played an important role as people of the region build their houses or their nearby and most of the settlement surrounded by agricultural fields.

All settlements have been classified by population sizes as well as the recognised service centres have also been classified by population size but the spatial distribution and interaction has been only measured through Nearest Neighbour Analysis. The evolution of settlement pattern of the region has been governed by several factors and forces which vary from one block to another block. So, the study reveals varying spatial pattern of settlement. The conventional visual judgment of the settlement pattern is taken as sparse, dispersed, agglomerated or clustered is now presented, agglomerated or clustered is through Nearest Neighbour Analysis. This pioneering work was first done by King and Dacey (1962) in geography. However, the statistics ( $R_n$ ) was originally developed by plant ecologist Clark and Evans (1954).

The following formula has been applied to know the spacing and distribution of settlements and recognised service centres within the study area.

$$\text{Formulae: } R_n = \frac{\overline{D_o}}{\overline{D_r}}$$

Where  $R$  = Nearest Neighbour Index

$$\overline{D_r} = \frac{1}{\sqrt{\frac{N}{A}}}$$

Where  $\overline{D_r}$  = Mean nearest neighbour distance

$N$  = Total number of settlements

$A$  = Total area

Where  $\overline{D_o}$  = Total length of settlements distance divided by the total number of service centres.

Standard error of the expected mean distance has also been calculated by the following formula.

$$\sigma \overline{D_r} = \frac{0.26126}{\sqrt{N^2/A}}$$

Again  $z$  value has been taken out to test the significance of the difference between  $\overline{D_o}$  and  $\overline{D_r}$  –

$$z = \frac{\overline{D_o} - \overline{D_r}}{\sigma \overline{D_r}}$$

The table no. 4.5 shows the result of the Nearest Neighbour Analysis of the service centres of the study area. The measurement of the spatial pattern by nearest neighbour statistics reveals that the average  $R_n$  value is 1.233 which is approaching uniform distribution of service centres in the study area. The nearest neighbour statistic revealed that the  $R$  value ranges from 0, when there is maximum aggregation of all the points at one location, through 1 which represents a random distribution up to 2.15 (which represents even distribution) if the value  $R$  falls between 0-1 or 1-2.15 They may be explained as approaching cluster and approaching uniform respectively.

Evenness of settlement spacing is shown in Fig 4.5, it reveals as nearest neighbour index point of view. The spacing pattern of service centre in Muzaffarpur district is near to uniform at higher order, therefore it is randomly distributed between fifth and seventh order of centres but in sixth order of centres the spacing is near to random as it says it is approaching to clustered, which may be caused by the influence of social, cultural and site or security reason. The mean near actual distance ( $\overline{D_o}$ ) is 3.44 km and has followed Christaller K-3 Model, Principle of Hierarchical Arrangements. On the basis of  $R_n$  value the distribution of service centre identified in four distinct pattern or categories:

**TABLE 2: DISTRIBUTIONAL PATTERN OF SERVICE CENTRES**

| Order                         | Do    | Dr    | Rn    | $\sigma Dr$ | Z      | No. of Settlements | Area   | Observed Distance | Population |
|-------------------------------|-------|-------|-------|-------------|--------|--------------------|--------|-------------------|------------|
| <b>Ist Order to 4th Order</b> | 5.72  | 3.12  | 1.83  | 0.21        | 11.915 | 14                 | 136.73 | 80.08             | 4,49,869   |
| <b>5th Order</b>              | 2.821 | 2.804 | 1.01  | 0.138       | 0.123  | 28                 | 220.1  | 78.98             | 2,75,333   |
| <b>6th Order</b>              | 2.403 | 2.527 | 0.98  | 0.092       | -1.341 | 51                 | 325.67 | 122.54            | 4,04,733   |
| <b>7th Order</b>              | 2.801 | 2.521 | 1.11  | 0.108       | 2.587  | 37                 | 235.00 | 103.62            | 2,63,410   |
|                               | 3.436 | 2.743 | 1.233 | 0.061       | 11.388 | 130                | 917.5  | 385.22            | 13,93,345  |

**1. Highly Uniform (1.30 to 2.15):** Highly uniform group includes settlement of first order to fourth order settlement. Muzaffarpur is higher on the basis of hierarchical ordering. Other higher rank service centres are also lie in this group. There are altogether 145 service centres which are distributed with mean near distance of 5.7 km. Kanti, Sahebganj, Motipur, Bhagwanpur, Turki, Kurhani, Aurai, Sakra, Gaighat, Paroo, Deoria and Musahri are centres spacing near uniformity. This might have caused by their advantages in location of different major transport location or junction and serve a large area of rural society.

**2. Approaching Uniformity (1.10 -1.30):** Approaching uniform group includes seventh order of service centre which is distributed with mean near distance of 3.8 km. there are 37 centres lies in this group.

**3. Random (0.90-1.10):** Random group includes higher number (51) of service centres of sixth hierarchical order. The mean near actual distance between these centres are 2.4 km.

**4. Approaching Clustered (0.90-0.00):** Approaching cluster group of service centres are 28 in number. They lie in fifth order of hierarchical arrangement of settlement. The mean distance between the settlements is 208 km.



## VI. CONCLUSION AND SUGGESTIONS

It is earlier to identify service centres or central places on theoretical models but once the behavioral models are correlated a number of problems arise. Presently the distribution patterns of recognised service centre present an impression that they are not necessarily governed by spatial centrality and the size of population. The most governing factor is the transport facilities, many service centres have emerged along the sites of national highway and railway stations, halts. Their location biasness is one of the major factors causing economic disparities in the district.

**Problems of Service Centres and Problems in the planning of Service Centre:** During the implementation phase of sixth five year plan, it was reported by local authorities that the selection of focal point is not exclusively based on centrality and functional indices. The identification and planning of proposed service centre brought political interference and local politics. Thus the problems and planning of service centre is closely interrelated term. After examine the result of sample survey of identified 130 service centres, the study reveals that there is inherent need of infrastructure development and proper planning for social services in the study area. The major problems are mentioned as follows:

1. The biggest hurdle of the service centre is inadequate transport network. Rail and road connection is very essential for development of region for interlinkage and exchange of services within different service centres. Infact road network plays a pivotal role in socio-economic transformation. It may be in forms of rail road junction point, road –road connection meeting point of several road etc. The abysmal condition of bridge National Highway (NH), State Highway (SH) that creates hindrance in service facilitation as well as its extension from the service centre in the district. A sort of problems associated with pot holed road associated with one another like security health service, financial institutional access agricultural cooperative committee and industrial site access are notable of them. There are several routes that restrict the expansion and influence of services due to wreaked condition of road and building process of new road.
2. Due to population pressure and haphazard growth, gradually leads unplanned settlement development in the region. The proper management of drainage and sewerage system is the key indicator in the problems of infrastructure sector, especially during monsoon the condition was going pathetic in every part of the region. Muzaffarpur faces water-logging due to lack of appropriate sewerage system in the own while some problems like lack of outlets in the rural areas due to compact settlement.
3. Third important problem is the inadequate supply of electricity. The electric supply influences the productivity of agriculture, household industry, market and other socio-economic services. Unavailability of electric supply consequently produces regional and socio-economic imbalances. For example, a large number commercial activities and industrial firm concentration found in the vicinity of East-West expressway with restart of Kanti thermal power plant. High concentration of higher order function shows itself better availability of electricity 16 to 20hour in a day. Majithi , Damodarpur-Koluaha, Sheikhpura, Bochaha, Jarang, and Gaighat have high centrality of services. Even whole region get 12 to 16 hours electric supply except in service centres distributed in central part of the district.
4. The fourth problem related with the service centre is concerned with health services. It restricted with only one district hospital and Shri Krishna Medical College, which have good



facilities. Infact, health infrastructure is very low in respect of its population. High prevalence of waterborne diseases like Kalazar, Typhoid, Diarrhea, T.B. and Jaundice indicates the necessity of increasing health facilities through the hierarchical order of these service centres. Recently increasing rate of dengue and encephalitis patients reveals the alarming condition of poor health services, which could be modified into better health infrastructure.

5. As far matter concerned with education, it is very discernible for overall development of people in the district. It is the axis of socio-economic up gradation. Higher education condition is needed much attention and improvement. Almost in 130 services centres, there are few technical institutions and degree colleges. Although Muzaffarpur affects the rural surroundings in terms of higher education and technical education.
6. Lack of cultural or recreation facilities are another problem of service centres. Among 130 service centres only 7 have equipped with Cinema hall, Library, Club, Stadium, Auditorium and other public basic amenities like public toilet, safe drinking water. Consequently expansion of civic amenities needed in all service centre which plays social harmony and accelerate rural development. There are several service centres which could be developed as religious and cultural service centre that upgrades the economic development in Rajkhand, Susta, Kany, Sahebganj, Saraiya, Deoria, Katara, Dholi-Sakara, Musahari etc.
7. There is lack of several agricultural infrastructural elements in several service centres and among hierarchy also. For example, there are merely three agricultural market are main service centres in the district. While it should be establish in block level also. Similarly, there are inadequate facilities of Storage (Krisi Beej Nigam, Khad Nigam), cold storage, financial institutions and packaging centres.
8. Law and order situation is also not in a good condition, where five service centres found in urban area, but snatching, robbery is very common problem. Even Patahi village situated 10 km away from Muzaffarpur witnessed robbery many times. In the same fashion at Bhakhara, Fatehabad, Sahebganj route is not secure for mobility of goods and services due to crime prone zone.
9. Veterinary services are not adequate in the district. There are one veterinary hospital in headquarter Muzaffarpur. There are also very few number of artificial insemination centre and veterinary clinic in the rural area which adversely affects animal health and agrarian economy of the district.

**Suggestions for planning of Service Centres:** The development and planning of following elements is directly needed with respect of above mentioned problem in resultant hierarchical arrangement of service centres.

- ✓ Development of transportation and road network through hierarchical importance of service centres besides it. Accelerating the task of proposed Airport at Patahi, rail route development in western part and governmental assistance for navigation facilities will be helpful in the milieu development of the region.
- ✓ Proper sewerage for public in terms of demographic hierarchy level management. Besides, it solid waste management should also be done in urban areas.

- ✓ There should be established more Community Welfare Centre at block level, Primary Health Centre at intermediate level and other medical facilities related with health at primary level.
- ✓ There should be established more institutions for higher education at block level along with up gradation of middle school in high school is inherently needed. There should be needed large number of employment oriented, professional and skill development courses and institution within identified service centres.
- ✓ Other centres like temporary distribution centre, periodical distribution centres and daily distribution centre should be establish in order to fulfill the connectivity of both horizontal as well as vertical level of marketing chain that works as focal point of socio-economic development.
- ✓ For agricultural development emphasis should be given on the establishment of following centres - storage facilities, agro-implements centre, seedling centre, fertilizer depot, agro-extension services, cold-storage etc. along with different banking and cooperatives to provide economic benefit in those centres.
- ✓ For the better management of flood and irrigation channelized canal system should be developed specially connecting western river channels to eastern flood prone rivers.
- ✓ For the betterment of industrial growth, there should be decentralization of small industries from Muzaffarpur industrial zone to different service centres.
- ✓ Development of cultural and historical importance service centres as tourist spots in term of Buddha circuit or Ramayana circuit
- ✓ To creating law and order state in the region there is inherent need to establishing more outposts and police station.

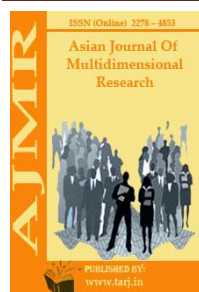
After going through the above analysis 130 service centres has been identified and further classified in seven orders of service centres due to its functional importance in the region. Out them 126 is identified as a rural service centres which are selected for the planning and development through hierarchical linkage between those centres. Through which regional growth of Muzaffarpur district should be accelerated.

#### **REFERENCES:**

- B.K. Narayan & D.R.Rao (1974): Regional Planning: Growth Centre Technique, Ind. Journal of Regional Science Vol.6 No.1
- Bansal, S.C. (1975): Town Country Relationship in Rural Urban interdependent Problems, Sanjeev Prakashan, Saharanpur
- Berry, B.J.L. & Garrison, W.L.(1958) :The Functional Base of Central Place Hierarchy and a note on the Central Place Theory and Range of a Goods, Economic Geography, Vol. 34.
- Bhat, L.S. (1976): Micro Level Planning: A case Study of Karnal Area, Haryana, India. K.B. Publications, New Delhi.
- Bimlendu Bhattacharya (1972): "Factors Determining the Central Functions and Urban Hierachy in North Bengal, "Geographical Review of India Vol. XXXIV No.4. PP. 327-338
- Boudeville, J.R. (1976): Less Espaces Economiques

- Bracey, H.E. (1952): Social Provisions in Rural Wiltshire, Methues & Co. Ltd, London.
- Brush, J.E. (1953): The Hierarchy of Central Places in South Western Wisconsin Geographical Review No. 43, PP. 380-402
- Berry, B.J.L. & Garrison, W.L. (1958): A Note on Central Place theory and the Range of a Good, Economic Geography 34. PP. 304-311.
- Bansal, S.C. (2010): Urban Geography, Meenakhshi Prakashan. Meerut.
- Census of India (2001): Primary Census Abstract Village Amenities Data Muzaffarpur District, Bihar
- Census of India (2011): Primary Census of India Muzaffarpur District, Bihar
- Christaller, W & Baskin, C.W (1933) : The Central Places in Southern Germany, Translated in English. 1966 (New Jersey)
- Clark P.J. & Evans, F.C.(1954) : Distance to Nearest Neighbor as a Measure of Spatial Relationships in Populations Ecology, 35. PP. 445-453
- Dacey, M.F. (1962): Analysis of Central Place and Point Patterns by Nearest Neighbor Method Lund Studies in Geography Series
- Dickinson, R.E. (1936): City Region and Regionalism, London
- Government of India (1980-85): VI Five year plan planning commission India, Delhi
- Hirschman, A.O. (1966) : The Strategy of Economic Development
- Isard, W. (1960): Gravity Potential and Spatial Interaction Modes" Methods of Regional Analysis, PP. 413-568, New York
- Jaiswal. S.N. (1973): Hierarchical Grading of Service Centres of the Eastern Part of Ganga Yamuna Doab and Their Role in Regional Planning PP. 327-334
- Jefferson, M. (1931): The Distribution of World City's Folks, the Geographical Review, Vol. XXI.
- Karr, N.R. (1960): Urban Hierarchy and Central Functions Around Calcutta In Lower West Bengal, India and Their significance, proceedings of the I.G.U. Symposium in Urban geography, London, PP. 253-274.
- Mahmood, A. (1977): Statistical Methods in Geographical Studies
- Mandal, R.B. (1950): Central Place Hierarchy in Bihar Plain National Geographical Journal of India XXI, (PP 48)
- Mukharjee, S.P. (1968): "Commercial Activity and Market Hierarchy in a part of Eastern Himalaya., Darjeeling NGJI, Vol. XIV, PP. 6-23, June-Sept.
- Pal, M.N. (1968): A Technique of Ranking of Central Places and determining Linkages, 21st I.G.U. Congress, New Delhi.
- Perroan, F. (1950): Economic Space Theory and Application. P. 157
- Philbrick, A.K. (1957): A real Functional Organization in Regional Human Geography, Economic Geography, Vol. 33. PP. 299-329

- Smailes, A.E. (1944): The Urban Hierarchy in England and Wales, Geography vol. 29 PP. 42-51.
- Singh, J(1979): Central Places and Spatial Organization in a Backward Economy Gorakhpur Region: A Study in Integrated Regional Development, Uttar Bharat Bhogol Parishad Gorakhpur, PP. 63-73.
- Singh, K.N. (1966): Spatial Pattern of Central Places in the Middle Ganga Valley, N.G.J.I., Vol. 12.
- Sen, L.K. et al, (1975): Growth Centres in Raichur: An Integrated Area Development Plan for a district in Karnataka, National Institute of Rural Development, Hyderabad
- Sen, Lalit, et al,(1976): Planning Rural Growth Centres for Integrated Area Development: A Study in Miryalguda Taluka; National Institute of Community Development Hyderabad
- Singh, O.P. (1969): A Study of Central Places in Uttar Pradesh PhD Thesis, B.H.U. Varanasi
- Singh, Onkar (1973): Hierarchy and Spacing of Towns in U.P (edi.)Urban Geography in Developing Countries Varanasi, PP 318-326.
- Singh, R.L. et al. (eds) (1976): Geographic Dimension of Rural National Geographical Society of India, BHU, Varanasi P.179
- Singh, R.B.P. (1985): Social Welfare for Rural Development A Case Study of Banka, Plan India Publications, New Delhi
- Smith, R.H.T. (1965): Method and Purpose in Functional Town Classification Annals, Association of Geographers 55. P. 534-98
- Ullman, E. (1941): A Theory of Location for cities, American Journal of Sociology vol. 46. PP. 853-864
- V.L.S. Prakasha Rao & R. Rama Chandran ed. R.P. Mishra & Others (1974): Planning for an Agricultural Regions" Regional Development and Planning
- Wanmail, S. (1983): Service Provision and Rural Development in India: A Study of Miryalguda Taluka Research Report No. 37 International Food Policy Research Institute, Washington D.C.
- Wanmali, S. (1983): Service Centre in Rural India: Policy, Practice and theory, B.R. Pub. Corporation, New Delhi.



## APPLICATION OF TAM AND THE ROLE OF GENDER IN ADOPTING MOBILE APPS FOR SHOPPING: AN EMPIRICAL ANALYSIS.

**Samala Nagaraj\***

\*Research Scholar,  
University of Hyderabad, INDIA.  
Email id: raajsamala@gmail.com

### ABSTRACT

*Marketers are finding new modes of selling products and services to the customers. After the successful application of website based selling and communication by the seller, mobile apps are the new mode of applications widely and effectively used. The present study aims to study the acceptance and adoption of mobile apps by the consumers. The widely applied theory of Technology Acceptance Model (TAM) is used to examine the objectives of the study. Perceived Usefulness and Ease of Use are the two major antecedents are included to study the attitude and intentions of the consumers in adopting the mobile apps for shopping purpose. The study also aimed to study the role of gender in adopting mobile apps. 365 responses were collected online using a structured questionnaire. The results are consistent with the earlier findings that ease of use and usefulness has an impact on the attitude and intentions of the consumers to adopt mobile apps for shopping in India. There is no gender difference in the same process. Marketers should improve the usability, accessibility, effectiveness, and ease of use in order to increase the number of users of mobile apps for shopping.*

**KEYWORDS:** TAM, Ease of Use, Perceived Usefulness, Structural Equation Modeling, Mobile Apps, Multi-Group Analysis.

## INTRODUCTION

According to Nielsen (2015, p. 1), “If 2014 was the year when E-commerce finally came into its own in India, 2015 promises to be the year of the mobile shopping app”. India seems to be the leader in the switch to mobile for e-commerce companies, with mobile platform accounting for 41% total e-commerce sales in 2014 (Vikas, 2015). The number of mobile apps downloaded globally is 102,062 million and by 2017 this figure is expected to reach 268,692 million (transparencymarketresearch.com, 2015).

Mobile phone applications are used by an individual for a number of activities like Social Network, Gaming, Music, Banking etc. Mobile App based shopping is one of the important activity perceived by the users; this is due to the advantages it provides to the shoppers over shopping physically. Shopping on-the-go on your smart phone saves a lot of time, personalized notifications, easy to compare products, hassle-free application design are some the major benefits of shopping using mobile apps. Though there are significant advantages of App-based shopping, it is not merely a substitute for physical and traditional shopping.

However, there are a few limitations in the usage of a mobile app for shopping, because of which the adoption of this mode for shopping is little less than anticipated. Though there is an increased presence of retailers, the Mobile App based commerce is relatively new (Lu & Su, 2009), when compared with the web-based shopping. Hence, at the early stages of its emergence, it is relevant to study the adoption intention of the consumers to shop using Mobile Apps.

This study henceforth aims to study the intention to use Mobile Apps for shopping in the Indian context. The study also intends to examine the role of gender, their attitude, and intentions in accepting the mobile apps. For the purpose, the widely accepted theoretical framework of Technology Acceptance Model (TAM) is used.

## REVIEW OF LITERATURE

Many earlier studies have used the theory of TAM to investigate the consumer intentions in adapting various concepts like the internet, online games, banking services and other multimedia services (Yang, 2013). Mobile apps are another form of marketing communications and interactive application which is more engaging consumers than the traditional website based format (Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011). Mobile App based shopping is a process which requires high active involvement and interaction of the user and the application (Kumar & Mukherjee, 2013). Mobile apps are much simpler form and are accessible at hand in a mobile phone. It has been a more improved form of communication between the seller and buyer.

The generic Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) is the basis for the development of Technology Acceptance Model by (Davis Jr, 1986). The model is first proposed to predict the acceptance of new Information Systems and Information Technology (Shih, 2004); and has been used in many empirical studies to predict the same (Venkatesh & Davis, 1996). According to (Davis, 1989, p. 320), Perceived Usefulness (PU) is “the degree to which a person believes that using a particular system would enhance his or her job performance” and in contrast, Perceived Ease of Use (PEoU) is defined as “the degree to which a person believes that using a particular system would be free of effort.” “An attitude is an individual’s self-description of his affinities for and aversions to some identifiable aspects of his environment” (Greenwald, Brock, & Ostrom, 2013, p. 197).



According to (Legris, Ingham, & Colletette, 2003), PEOU and PU are the two vital determinants to study the attitude and behavioral intention to adopt a new information system or technology. Ease of use is proved to be the stronger antecedent of intention to use (Venkatesh & Davis, 2000). Though many researchers have used ease of use and usefulness with other subjective and normative factors to study the consumer adoption behavior, these two stand as one of the major influential factors to adoption of new technologies.

Usefulness is the extrinsic motivation and is based on goal achievement (Venkatesh, 1999) and thus can be considered as the main motive of the behavioral intention. Perceived usefulness is a simple concept including the two important components of efficiency and effectiveness. However, the usefulness factor in mobile apps context is not just about extrinsic motivation in terms of efficiency and effectiveness, it is also about the flexibility and accessibility of the application. Hence, the usefulness factor is an important factor to study the adoption intentions of mobile apps by the consumers.

### **RESEARCH OBJECTIVES**

The aim of the study is to investigate the moderating role of gender in the use of Mobile Applications (Apps) for shopping; by applying the Technology Acceptance Model (TAM) by (Davis Jr, 1986). According to Davis (1989), Perceived Usefulness and Perceived Ease of Use predict the Acceptance of Technology and Intension to Use. Hence, the former two variables are have been used as the predictors to measure the attitude and intention to use mobile apps for shopping.

The objective of the study is to examine the moderation role of gender in adapting the Mobile App services for shopping. To test whether there is any difference between the two groups in the adaptation process.

### **HYPOTHESES**

Based on the review of the literature and in correspondence with the research objectives, the following hypotheses are proposed for the study:

H1: PU will have a positive effect on ATU of mobile apps for shopping.

H2: PU will have a positive influence on ITU of mobile apps for shopping.

H3: PEOU will have a positive effect on ATU in the adaption of mobile apps for shopping.

H4: PeoU will have a positive influence on ITU in the adaption of mobile apps for shopping.

H5: ATU will have a positive influence on ITU the mobile app services for shopping.

### **METHODOLOGY**

To conduct the study, a structured questionnaire is administered to collect the primary data. The respondents are students of a selected university. For the study, a total of 600 questionnaires have been distributed, of which 392 responses have been received. After omitting the invalid ones, finally, 365 responses have been considered for the study.

The questionnaire is designed by adapting the developed scales of the four constructs of the research model i.e., Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude towards Use (ATU) and Intension to Use (ITU). For PU, PEOU and ITU, Seven-point Likert

scale has been used; with 1 representing “Extremely Unlikely” to 7 representing “Extremely Likely”. For ATU 7-point semantic differential scale is used.

The first part of the questionnaire is aimed to collect the demographic details of the respondents, whereas the second part is designed to measure the variables of the research model being tested. Covariance-based Structural Equation Modelling (CB-SEM) technique is used to analyze the survey data.

## DATA ANALYSIS & RESULTS

The first step in the data analysis is to conduct the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to confirm the reliability and validity of the data collected through the measurement variables used for the study. The factor loadings of the variables resulted above 0.50, which is a minimum threshold value as recommended by Guadagnoli and Velicer (1988) and the reliability values of the variables resulted above 0.70 as recommended by Nunnally (1991); the values of these tests are shown in **Table 1**. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.886 and is significant at  $p < 0.001$  which is well above the suggested value of 0.60 (Tabachnick, 2001).

Next, Confirmatory Factor Analysis (**Figure 1**) is conducted to check the validity measures of the data in which the model fit statistics of the measurement model are within the recommended values. Chi-square = 276.99 at 113 degrees of freedom; CMIN/DF = 2.451 (Wheaton, Muthen, Alwin, & Summers, 1977);  $P = .00$ ; GFI = .917 (Joreskog & Sorbom, 1988); CFI = .989 (Bentler, 1990); NFI = .982 (Bentler & Bonett, 1980); TLI = .987 (Hu & Bentler, 1999); RFI = .979 (Marsh & Hau, 1996); RMSEA = .063 (MacCallum, Browne, & Sugawara, 1996).

**TABLE 1: FACTOR ANALYSIS**

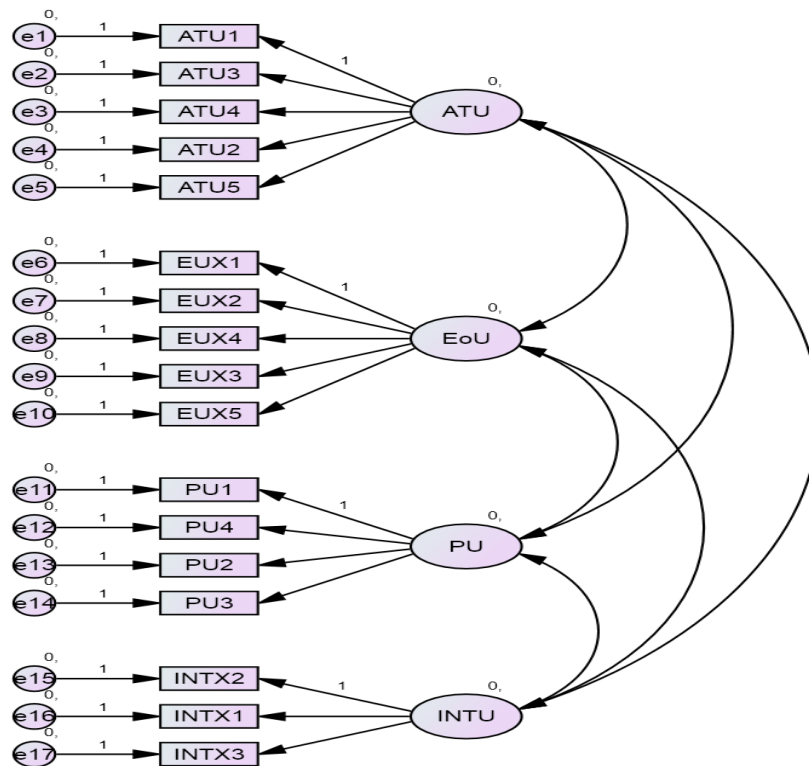
| Variables used for the study   | Factor Loadings | Alpha Value |
|--|-----------------|-------------|
| <b>Perceived Usefulness of Mobile Apps</b>                                       |                 | 0.98        |
| Using Mobile Apps for shopping would enable me to accomplish tasks more quickly. | 0.978           |             |
| Using Mobile Apps for shopping would improve my shopping experience.             | 0.975           |             |
| Using Mobile Apps would make shopping easier.                                    | 0.972           |             |
| I would find Mobile App useful for shopping.                                     | 0.975           |             |
| <b>Perceived Ease of Use</b>   |                 | 0.98        |
| The Learning to operate Mobile App would be easy for me.                         | 0.978           |             |
| I would find it easy to get Mobile App to do what I want to do.                  | 0.972           |             |
| My interaction with Mobile App would be clear and understanding.                 | 0.964           |             |
| I would find Mobile App to be flexible to interact with.                         | 0.970           |             |
| I would find Mobile Apps easy to use.  | 0.921           |             |
| <b>Attitude towards use of Mobile Apps</b>                                       |                 | 0.99        |
| I Feel using Mobile Apps is (Favourable - Unfavourable)                          | 0.977           |             |
| I Feel using Mobile Apps is (Good - Bad)   | 0.969           |             |
| I Feel using Mobile Apps is (Wise - Foolish)                                     | 0.976           |             |
| I Feel using Mobile Apps is (Beneficial - Not Beneficial)                        | 0.970           |             |

|  |       |      |
|--|-------|------|
| I Feel using Mobile Apps is (Positive - Negative)                    | 0.966 |      |
| <b>Intention to use Mobile Apps</b>                                  |       | 0.99 |
| I intend to use Mobile Apps for shopping frequently.                 | 0.963 |      |
| I intend to use Mobile Apps than websites for shopping.              | 0.965 |      |
| I predict I would use Mobile Apps for shopping in the next 6 months. | 0.954 |      |

The results of the convergent and discriminant validities are obtained through the CFA performed. The results support the validity concerns of the data collected; Average Variance Extracted (AVE) values of each variable is greater than the correlation values of other variables (Fornell & Larcker, 1981); The values of AVE of the variables are well above 0.50 (Fornell & Larcker, 1981) and the values for composite reliability are above the recommended value 0.70 (Bagozzi & Yi, 1988; Hair, Black, Babin, & Anderson, 2006); the results of these validities tests are shown in **Table 2**. Since the measurement model confirms the predictive validity and reliability concerns of the data to be used for further analysis in the study, the next phase is to conduct the Structural Equation Modelling (SEM) on the proposed model of the study.

Since the main objective of the study is to understand the moderating role of gender in adapting Mobile App services for shopping, we have conducted a multi-group analysis directly on the proposed relationships between the variables. Out of 365 respondents, 172 (47%) were male and 193 (53%) were female respondents of which almost 73% of when are in the age group of 20 – 30 years and the majority of them are either graduates or post-graduates. since the percentage of male and female is almost equal it is ideal for the gender comparison.

**Figure 1: Measurement Model**



The results generated after testing the structural model for both male & female are shown in **Figure 2** and **Figure 3**, respectively. All the hypotheses were statistically significant with the relationships established between the variables in the model for both male and female except, the relationship between perceived usefulness and intention to use in case of males. The insignificance in this relationship shows that intention to use the mobile app for shopping by the male is not influenced by the usefulness of the app. Male users would like to use the app for the sake of ease of use, to try the novelty of the app and use for comparing the similar mobile apps.

**TABLE 2: RELIABILITY AND VALIDITY MEASURES OF THE VARIABLES:**

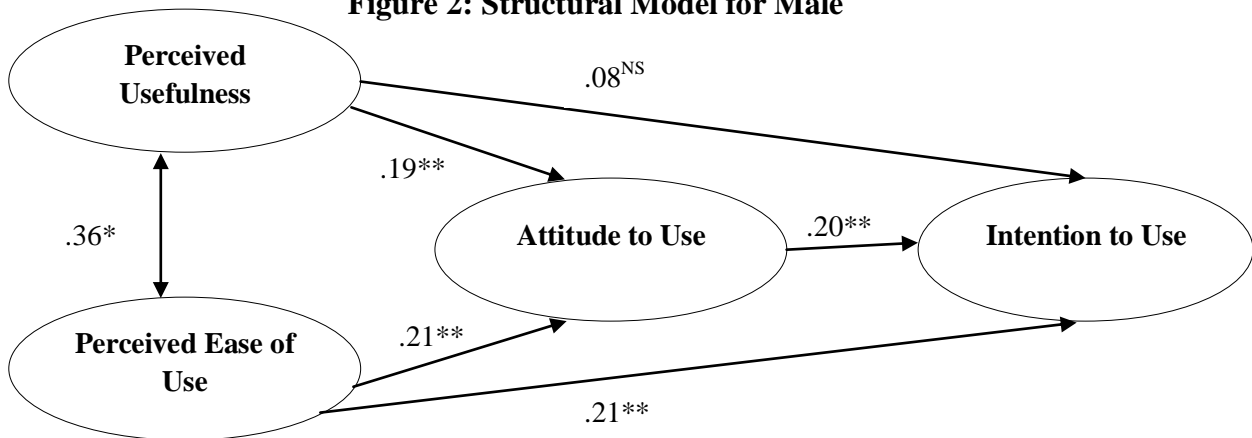
|             | CR    | AVE   | MSV   | ASV   | INTU         | ATU          | EoU          | PU           |
|-------------|-------|-------|-------|-------|--------------|--------------|--------------|--------------|
| <b>INTU</b> | 0.990 | 0.970 | 0.098 | 0.071 | <b>0.985</b> |              |              |              |
| <b>ATU</b>  | 0.995 | 0.975 | 0.098 | 0.065 | 0.313        | <b>0.988</b> |              |              |
| <b>EoU</b>  | 0.989 | 0.947 | 0.074 | 0.058 | 0.272        | 0.222        | <b>0.973</b> |              |
| <b>PU</b>   | 0.993 | 0.971 | 0.052 | 0.048 | 0.206        | 0.220        | 0.228        | <b>0.985</b> |

Note: CR is Composite Reliability, AVE is Average Variance Extracted, MSV is Maximum Shared Variance, ASV is Average Shared Variance, Value in bold are square root values of the AVE.

In the next step, we have conducted a chi-square test to test the difference in the two groups of gender. From the results, it is clearly seen that the z-score values between the two groups are insignificant for the relationship between the variables (**Table 3**). From this, we can conclude that there is no difference in the gender in terms of their attitude and intention to use mobile apps for shopping. Hence it can be concluded that ease of use effects the attitude and intention of the male and female alike in terms of using mobile apps for shopping, whereas usefulness of the app has no impact on the intention to use with regard to males.

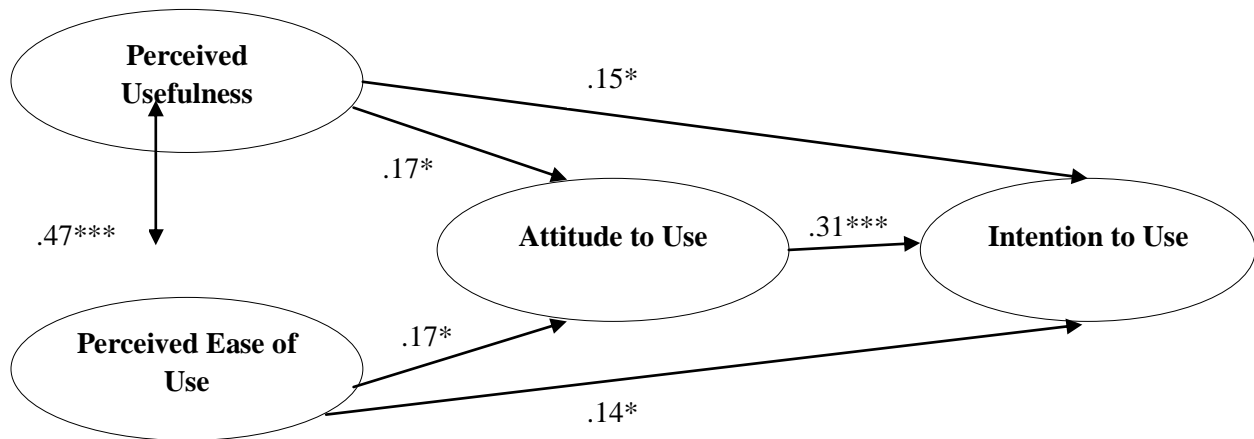
Finally the appropriateness of the structural model is verified with the related model fit indices. The model has resulted within the recommended thresholds of different fit indices calculated. Chi-square = 490.585 at 222 degrees of freedom; CMIN/DF = 2.210 (Wheaton et al., 1977); P = .00; GFI = .869 (Joreskog & Sorbom, 1988); CFI = .983 (Bentler, 1990); NFI = .970 (Bentler & Bonett, 1980); TLI = .979 (Hu & Bentler, 1999); RFI = .963 (Marsh & Hau, 1996); RMSEA = .058 (MacCallum et al., 1996). Hence, the structural model tested is deemed to be fit for considering the results for further discussion.

**Figure 2: Structural Model for Male**



Note: \*\* means significant at 0.01; \* means significant at 0.05; NS means not significant.

**Figure 3: Structural Model for Female**



Note: \*\*\* means Significant at 0.001; \*\* means Significant at 0.01; \* means Significant at 0.05

**TABLE 3: DIFFERENCE BETWEEN THE MALE AND FEMALE GROUPS.**

|       |      |      | Male     |         | Female   |         |         |
|-------|------|------|----------|---------|----------|---------|---------|
|       |      |      | Estimate | P value | Estimate | P value | z-score |
| AA    | <--- | EUSE | 0.183    | 0.005   | 0.19     | 0.024   | 0.065   |
| AA    | <--- | USEF | 0.178    | 0.009   | 0.222    | 0.018   | 0.382   |
| INTEN | <--- | USEF | 0.083    | 0.308   | 0.161    | 0.031   | 0.708   |
| INTEN | <--- | AA   | 0.244    | 0.007   | 0.264    | ***     | 0.188   |
| INTEN | <--- | EUSE | 0.222    | 0.004   | 0.134    | 0.045   | -0.853  |

**DISCUSSION**

The results of the present study is consistent with the earlier findings of the similar studies (Chao-Min, Chen-Chi, Hsiang-Lan, & Yu-Hui, 2009; Gefen, Karahanna, & Straub, 2003; Hassanein & Head, 2007; J. B. Kim, 2012; S. C. Kim, Yoon, & Han, 2016; Yang, 2013) on consumer’s attitude and intention towards online shopping using Technology Acceptance Model (TAM). This study was specially intended to study the intentions of consumers towards using Mobile Apps for shopping. The findings once again confirm that Usefulness and ease of use of the mobile apps do definitely drive consumers to adopt the applications for the intended use.

The results suggest that ease of use and usefulness influence that attitude of consumers towards the use of mobile apps for shopping purpose. Further, the attitude to use the mobile apps influence the intention to use the apps for shopping. It has been always found that usefulness of an application is a major drive for consumers to adopt the application and ease of use is another important driving factor for adoption of an application. And the same has been proved in the adoption of a variety of applications like websites and other new technologies. This is also in line with the results of the similar studies in other contexts like banking services, mobile services, other electronic and information related services.

The study also concludes the difference in intentions of gender to adopt mobile apps for shopping. Majorly, there is no huge difference in influence ease of use and usefulness effecting the attitude and intention to use mobile apps. However, statistically, the results provide support for the point that male does not get influenced by the perceived usefulness of the mobile app in terms of their attitude towards the use of the app. Hence, it is important to notice that both the gender get influenced by the two major factor of TAM i.e., ease of use and usefulness in terms of adoption of mobile apps.

The marketers henceforth should concentrate more on improving the usability features of the mobile apps as well the ease of use while designing the app. It is however understood that the ease of use would definitely encourage users to adopt the application for the intended use. Designers should focus on the pattern, form and format of the application in order to improve the ease of use. Simultaneously, the necessary features associated with the supporting features should be included in the app design which would attract more users. In the situation where hundreds of mobile applications are being introduced by firms to increase their reachability and presence, it is important to improve the design of the apps in terms of usefulness and ease of use to keep abreast in the competition.

### LIMITATIONS

The present study did not consider a particular category of mobile apps and a selected category of the age group of respondents. It would be interesting to consider a select age group like millennial for the study. The mobile apps considered were selling all category of products like electronic products, grocery, books and apparels. However, considering any particular category of mobile apps like apparels along may show different results in terms of the role played by gender in adopting mobile apps. Further, the sample size is considered relatively small to generalize the results.

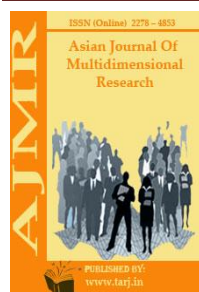
### REFERENCES

- Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behaviour.
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74-94.
- Bellman, S., Potter, R. F., Treleaven-Hassard, S., Robinson, J. A., & Varan, D. (2011). The effectiveness of branded mobile phone apps. *Journal of Interactive Marketing*, 25(4), 191-200.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological bulletin*, 107(2), 238.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological bulletin*, 88(3), 588.
- Chao-Min, C., Chen-Chi, C., Hsiang-Lan, C., & Yu-Hui, F. (2009). Determinants of customer repurchase intention in online shopping. *Online Information Review*, 33(4), 761-784. doi:10.1108/14684520910985710
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319-340. doi: 10.2307/249008
- Davis Jr, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. Massachusetts Institute of Technology.



- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research (JMR)*, 18(1), 39-50.
- Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27(1), 51-90.
- Greenwald, A. G., Brock, T. C., & Ostrom, T. M. (2013). *Psychological foundations of attitudes*: Academic Press.
- Guadagnoli, E., & Velicer, W. F. (1988). Relation to sample size to the stability of component patterns. *Psychological bulletin*, 103(2), 265-275.
- Hair, J., Black, W., Babin, B., & Anderson, R. (2006). *Multivariate Data Analysis* (6th ed.). New Jersey: Pearson Prentice Hall.
- Hassanein, K., & Head, M. (2007). Manipulating perceived social presence through the web interface and its impact on attitude towards online shopping. *International Journal of Human-Computer Studies*, 65(8), 689-708.
- Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. doi: 10.1080/10705519909540118
- Joreskog, K. G., & Sorbom, D. (1988). LISREL 7: A guide to the program and its applications. *Chicago: SPSS Inc.*
- Kim, J. B. (2012). An empirical study on consumer first purchase intention in online shopping: integrating initial trust and TAM. *Electronic Commerce Research*, 12(2), 125-150.
- Kim, S. C., Yoon, D., & Han, E. K. (2016). Antecedents of mobile app usage among smartphone users. *Journal of Marketing Communications*, 22(6), 653-670.
- Kumar, A., & Mukherjee, A. (2013). Shop while you talk: Determinants of purchase intentions through a mobile device. *International Journal of Mobile Marketing*, 8(1), 23-37.
- Legris, P., Ingham, J., & Collette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management*, 40(3), 191-204.
- Lu, H. P., & Su, P. Y. J. (2009). Factors affecting purchase intention on mobile shopping web sites. *Internet research*, 19(4), 442-458. doi: doi:10.1108/10662240910981399
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, 1(2), 130.
- Marsh, H. W., & Hau, K.-T. (1996). Assessing goodness of fit: Is parsimony always desirable? *The Journal of Experimental Education*, 64(4), 364-390.
- Nielsen. (2015). Mobile Shoppers Turn App-Happy. Retrieved 10/01/2016, from Retailers Association of India [http://rai.net.in/images/Report\\_Repository/pdf/nielsen-featured-insights.pdf](http://rai.net.in/images/Report_Repository/pdf/nielsen-featured-insights.pdf)
- Nunnally, J. C. a. B., I.H. (1991). *Psychometric Theory*. New York, NY.: McGraw.
- Shih, H.-P. (2004). An empirical study on predicting user acceptance of e-shopping on the Web. *Information & Management*, 41(3), 351-368.

- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). New York: Harper & Row.
- transparencymarketresearch.com. (2015). Mobile Applications Market - Global Industry Analysis, Size, Share, Growth, Trends and Forecast 2014 - 2020.
- Venkatesh, V. (1999). Creation of favorable user perceptions: Exploring the role of intrinsic motivation. *MIS Quarterly*, 239-260.
- Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision sciences*, 27(3), 451-481.
- Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186-204. doi: 10.2307/2634758
- Vikas, S. N. (2015, 28/5/2015). 41% of India E-commerce sales is from Mobile; Mobile wallet usage surging: Meeker's 2015 Internet Trends, *Economictimes*. Retrieved from <http://tech.economictimes.indiatimes.com/news/internet/41-of-india-e-commerce-sales-is-from-mobile-mobile-wallet-usage-surging-meekers-2015-internet-trends/47452981>
- Wheaton, B., Muthen, B., Alwin, D. F., & Summers, G. F. (1977). Assessing reliability and stability in panel models. *Sociological methodology*, 8(1), 84-136.
- Yang, H. C. (2013). Bon Appétit for apps: young American consumers' acceptance of mobile applications. *Journal of Computer Information Systems*, 53(3), 85-96.



## SYNTHESIS, SPECTRAL AND ANTIBACTERIAL STUDIES OF DEMI-MACROCYCLES OF LIGAND $N_2O_2$ WITH FE (II), AND ZN(II) IONS

Sameena Rasheed \*; Arvind Prasad Dwivedi\*\*

\*Department of Chemistry,  
Govt. Girls P.G. College (NAAC) Rewa (M.P.) INDIA

\*\* Department of Chemistry,  
Govt. S.G.S (Autonomous) College Sidhhi (M.P) INDIA.  
Email id: adarvindchitrakoot@gmail.com

### ABSTRACT

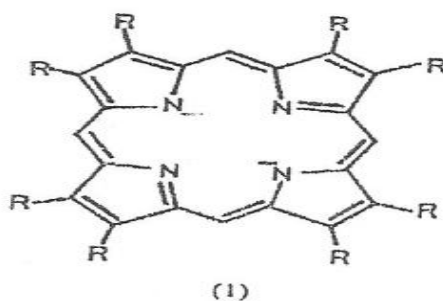
*Demi-macrocyclic complexes of ligand  $N_2O_2$  with Fe (II) and Zn (II) ions were synthesized characterized by spectral methods by FTIR, UV-visible, elemental analysis, magnetic susceptibility and molar conductivity the antimicrobial activity of these two complexes has been examined in vitro against bacteria and fungi.*

**KEYWORDS:** Molar, Analysis, Vitro Methods, Spectral.

## 1. INTRODUCTION

A very large number of synthetic, as well as many natural macro cycles have now been studied in considerable depth.<sup>1-3</sup> A major thrust of many of these studies has been to investigate the unusual properties frequently associated with cyclic ligand complexes. In particular, the investigation of spectral, electrochemical, structural, kinetic and thermodynamic aspects of macro cyclic complex formation have all received considerable attention.

The fact that macro cyclic ligand complexes are involved in a number of fundamental biological systems have long been recognised. The importance of such complexes, for example to the mechanism of photosynthesis or to the transport of oxygen in mammalian and other respiratory systems, has provided a motivation for investigation of the metal-ion chemistry of these systems as well as of cyclic ligand systems in general. The possibility of using synthetic macro cycles as models for the biological systems have provided an impetus for much of this research.



Since 1960, a very large number of other synthetic macro cycles have been prepared and this has resulted in a great increase in interest in all aspects of the chemistry of macro cyclic systems.

A part from the biological implications, aspects of the chemistry of macro cyclic ligands are of relevance to a diverse number of other areas. Indeed, there has been a remarkable expansion of research involving these other areas during recent times. Many of the developments impinge on topics such as metal ion catalysis, organic synthesis, metal-ion discrimination, and analytical methods, as well as on a number of potential industrial, medical and other applications.<sup>4-14</sup>

## 1. MATERIALS AND METHODS

All the chemicals and solvents were employed in these studies are of AR-grades viz. Loba, Aldrich Fisches scientific band the C, H, and N elemental analysis of the sample was carried out micro analytically. Oxygen were determined different methods, Fe(II) and Zn(II) ions and chloride were determined gravimetrically. The FTIR spectra (4000-400  $\text{cm}^{-1}$ ) were recorded on a Jasco model 4100 FTIR spectrophotometer as Kbr discs. where as UV-visible spectra was recorded on Shimadzu 1700. The conductivity measurements were made in DMSO or nitro methane ( $10^{-3}$  mho) at room temperature on systronic conductivity meter at 8000 G in a Evans as magnetic susceptibility balance using  $\text{Co} [\text{CHg} (\text{SCN})_4]$  as celebrant the experimental susceptibility, were corrected for diamagnetic complexes as Pascal constants.

### Synthesis of ligand $\text{N}_2\text{O}_2$

Ethane 1,2-diamine (30g) was added to acetone (300 ml) in a 500 ml flash and the solution cooled in a ice bath perchloric acid (71%). Keeping the temperature below  $20^\circ\text{C}$ . After few

hours, fine crystals of the product was obtained which is insoluble in acetone washed and vanished. The product was remained colourless and was air dried, the yield was 85% (Table 1).

**Table 1. Elemental Analysis of ligand  $N_2O_2$**

Anal calculation %: C, 36.77; H, 6.61; N, 6.12; O, 34.98;

Cl, 15.50; found: C, 36.24; H, 6.59; N, 6.13; O, 34.92

Cl, 15.49

IR (Kbr)  $\nu_{\text{C-H}}$  2960,  $\nu_{\text{S}}(\text{C-H})$  2909  $\text{cm}^{-1}$ ,  $\nu(-\text{C}-(\text{CH}_3)_2)$  13.85.1565(s)

$\nu(\text{C=O})$  1685 (s),  $\nu(\text{N-H})$  3370, 3266, 3007,  $\nu(\text{N-C})$  1260,

$\nu_{\text{as}}(\text{CH}_2)$  2985;  $\nu_{\text{s}}(\text{CH}_2)$  3007;  $\delta_{\text{s}}(\text{CH}_3)$  1348  $\text{cm}^{-1}$ ,  $\delta_{\text{as}}(\text{CH}_3)$  1445  $\text{cm}^{-1}$

$\delta_{\text{s}}(\text{CH}_2)$  1473  $\text{cm}^{-1}$   $\nu(\text{ClO}_4)$  1105, 655  $\text{cm}^{-1}$

**Syntheses of Fe (II) complex**

**4,4,6,6-Tetramethyl-5,1,8- diazadodeca-2,11-dione Iron(II) complex**

Iron(II) perchlorate (10 ml) was dissolved in water followed by [amke +  $\text{H}_2$ ] ( $\text{ClO}_4$ )<sub>2</sub> (24 gm, 0.052 mol). The mixture was refluxed until the colour of the solution changed from green to reddish brown after some time the product was filtered, recrystallized from methanol and evaporated to dryness in vacuum (Table 2).

**Table 2.  $C_{14}H_{28}N_2O_{10}Cl_2 Fe$ , 516857 Cal. Mass (M)**

| % Calculated Mass | % Observed Mass |
|-------------------|-----------------|
| C = 32.34         | C = 32.36       |
| H = 5.42          | H = 5.43        |
| N = 5.38          | N = 5.37        |
| O = 30.77         | O = 30.73       |
| Cl = 13.63        | Cl = 13.63      |
| Co = 11.33        | Co = 11.32      |

**IR Kbr  $\text{cm}^{-1}$**

$\nu(\text{M-N})$  530,  $\nu(\text{M-O})$  458  $\text{cm}^{-1}$

D-d Spectra (Acetone)

6900  $T_2 \rightarrow 9700$

Dq = 830

**IR Spectral data of Ligand**

**Synthesis of Zn(II) complex**

Zn(II) perchlorate (20 ml) was dissolved in methanol followed by [amke +  $\text{H}_2$ ] ( $\text{ClO}_4$ )<sub>2</sub> (24 gm, 0.052 mol). The mixture was refluxed until the yellow colour changes the product was filtered, recrystallized from methanol and evaporated to dryness in vacuum (Table 3).

**Table 3. Elemental analysis of  $C_{14}H_{28}N_2 O_{10}Cl_2Zn$  Demi-macrocyclic complex of Zn(II) ion**

| % Calculated Mass | % Observed Mass |
|-------------------|-----------------|
| C = 48.06         | C = 47.83       |
| H = 3.45          | H = 3.60        |
| N = 7.99          | N = 8.06        |

|            |            |
|------------|------------|
| O = 32.04  | O = 31.06  |
| Cl = 13.50 | Cl = 13.54 |
| Zn = 11.20 | Zn = 11.30 |

**IR (Kbr)**

(Zn – N) (Zn-O)

565 470

MLCT

25000 – 29000 cm<sup>-1</sup>Conductivity ohm<sup>-1</sup> mol<sup>-1</sup> = 11.0**Disc diffusion assay**

Antibacterial activity of the synthesized demi-macrocylic [M(L) (ClO<sub>4</sub>)] complexes was carried out using disc diffusion method. Petri plates were prepared with 20 ml of sterile Muller Hinton Agar (MHA). The test culture were swabbed on the top of solidified media and allows to dry for 30 min. at room temperature for compound diffusion. Negative control was prepared using solvent streptomycine (10 µg/disc) was used as positive control. The plates were incubated for 24 h at 37<sup>0</sup>C for bacteria zone of inhibition was recorded in millimeters and experiment was repeated twice.

**Determination of minimum inhibitory concentration (Mic.)**

Minimum inhibitory concentration studies of synthesized compounds were performed at 250-0.05 µg/ml using DMSO as solvent system the Mic. was performed in 96 well assay concentrations of the synthesized demi-macrocylic [M (L) (ClO<sub>4</sub>)] complex with standard antibiotic positive and DMSO solvents as negative controls. An equal volume of 100 ml of fresh bacteria broth suspension was added to the wells without altering the dilution factor. Mic. plates were incubated at 37<sup>0</sup>C for 24 h. The Mic. of [M(L) (ClO<sub>4</sub>)] complex showing different inhibitory effect.

**2. RESULTS AND DISCUSSION**

**Characterization of the ligand:** The 14-membered N<sub>2</sub>O<sub>2</sub> demi-macrocycle has been synthesized by mixed condensation of ethane-1,2-diamine with acetone as per the standard method. The addition of acid activates the amine group by protonation. The analytical results of the ligand and complexes are in conformity with their proposed compositions.

**IR spectra of N<sub>2</sub>O<sub>2</sub>**

The IR Spectra of the ligand shows characteristic strong absorption band at 2960 cm<sup>-1</sup> primarily due the asymmetric stretching mode in which the two C–H bonds of the methyl group are extending while the third one is contracting at 2904 cm<sup>-1</sup> due to symmetrical stretching (vsGHb) in which all three of the C–H bond extend and contract in phase. The peak at 2985 cm<sup>-1</sup> and 3007 are attributed to the asymmetrical stretching (vasCH<sub>2</sub>) and symmetrical stretching (vsCH<sub>2</sub>). The high energy shifting of these peaks reflect strain in the chain. The symmetrical bending vibration (5sCH<sub>3</sub>) causes peak at 1348 cm<sup>-1</sup>, while the sharp peak at 1445 cm<sup>-1</sup> is attributed to asymmetrical bending (5asCH<sub>3</sub>). Strong absorption band at 1473 cm<sup>-1</sup> is the scissoring band (5sCH<sub>2</sub>) of methylene group. Absorption band between 1313 cm<sup>-1</sup> to 1156 cm<sup>-1</sup> is ascribed to twisting and wagging vibrations of methylene group. Strong absorption peak at 1685 cm<sup>-1</sup> is due to ketonic



stretching vibration. Overlapping band peak at 3019, 3007, 3266 and 33701 are due to the N–H stretching vibration. Strong bands due to ionic perchlorate occur at 1105  $\text{cm}^{-1}$  and 655  $\text{cm}^{-1}$ .

**Characterization of Complexes:** The metal complexes have been synthesized by the reaction of the respective metal perchlorates with the demi-macrocyclic ligand according to the following reaction.



where, M = Fe(II) and Zn(II)

The molar conductance values ( $\lambda_m = 5\text{-}15 \Omega^{-1} \text{cm}^2 \text{mol}^{-1}$ ) of the complexes in DMSO ( $10^{-3}\text{M}$ ) indicate their non-electrolytic nature.

**IR spectra** The IR spectra of the complexes exhibit a strong sharp to medium intensity band at 600-546  $\text{cm}^{-1}$  region which may be assigned to metal oxygen stretching vibration. The  $\nu(\text{M-O})$  stretching frequencies are in order of Fe(II) and Zn(II). Upon complex formation, the intensities of some of the vibrations are decreased which may be attributed to the hindered vibrations. The characteristic  $\nu(\text{C-O})$  absorption frequencies undergo a negative shift by about 50  $\text{cm}^{-1}$  in the complexes which may be ascribed to the relaxation effect caused to the lone pair donation by the oxygen atom to the metal ion. The  $\nu(\text{M-ClO}_4)$  stretching frequency sharp band at 535-500  $\text{cm}^{-1}$  is assigned to the metal-nitrogen stretching frequency. The order of  $\nu(\text{M-N})$  stretching frequencies is Fe(II) and Zn(II). The non-appearance of  $\nu_s(\text{N-H})$ ,  $\nu_{as}(\text{N-H})$  and  $8(\text{N-H})$  vibrations in the complexes confirm the co-ordination of the metal ion by the deprotonation of the internal protons.

**UV-visible spectra:** The electronic spectra of Fe(II) complex showed splitted single absorption band at 9700  $\text{cm}^{-1}$  and 86900  $\text{cm}^{-1}$  assignable to  ${}^5\text{T}_2 \rightarrow {}^5\text{T}$  transition in the ligand field of near on symmetry, the  ${}^5\text{D}$  free ion ground state term splits into  ${}^5\text{T}_2$  g ground state and  ${}^5\text{t}_g$  excited state, accordingly the electronic spectra displays only one spin allowed band in the visible or near IR region. The intense CT bands at 28500  $\text{cm}^{-1}$  is assigned to ligand to metal CT. UV-visible electronic spectra Zn(II) complex shows MLCT bands due to completely filled  $d_f$  orbital d-d transitions are not expected in Zn(II) complex show absorption band at 9700  $\text{cm}^{-1}$  and 8690  $\text{cm}^{-1}$  due to transition and transitions electronic spectra data of complex indicates octahedral geometry around entire metal ion the metal complex has been synthesized by the reaction of the respective metal perchlorates with demi-macrocyclic ligand.

**Magnetic moment:** The magnetic moment of Iron(II) complexes are consistent with high-spin octahedral complexes. Its values are equivalent to 5.68 BN. The Zn(II) indicate diamagnetic nature of these complex and shows the  $d^{10}$  electronic configuration.

### Antibacterial activity

Antibacterial activity of demi-macrocycles of ligand 4,4,9,9-tetra methylene-5, 8-diazanium dodeca-2, 11-dione diperchlorate any there complexes were studied against several types of bacteria gram + ve and gram-ve compounds and complexes exhibited antimicrobial activities.

**Table 4.** The antibacterial activity of the complexes

| S. No. | Compound                   | S. aureus | E. Coli | Pseudomonas | C. albicaus fungi |
|--------|----------------------------|-----------|---------|-------------|-------------------|
| 1.     | 4,4,9,9-tetramethyle-5, 5- | 11        | 13      | 14          | 22                |

|    |  |    |    |    |    |
|----|--|----|----|----|----|
|    | diazadodeca-2,11-dione Fe(II) complex                            |    |    |    |    |
| 2. | 4,4,9,9-tetramethyle-5, 8-diazadodeca-2, 11-dione Zn(II) complex | 22 | 25 | 20 | 31 |

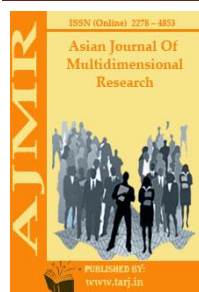
## CONCLUSION

Synthesis, spectral and anti microbial studies of demi-macrocycles of ligand  $N_2O_2$  with Fe(II) and Zn(II) ions were characterized by various physic-chemical methods, such as elemental chemical analysis, FTIR, UV-vis., and magnetic susceptibility. Molar conductance of two complexes in DMSO shows that they are non-electrolytes, Fe(II) and Zn(II) complexes found octahedral geometry the antimicrobial activities of synthesized demi-macrocyclic complexes were examine against bacteria and fungi and disc diffusion method. Both the complexes show considerable effective antimicrobial activities.

## REFERENCES

- [1] Rasheed, Sameena, Dwivedi, Arvind Prasad, and Khan, M.U.: Int. J. of Adv. Research i Chem. Sci., 2018, Vol. 5, issue 4, 3-9.
- [2] Emandi, A., and Badea, M.: J. Therm Anal. Calor. 2006, 84, 601-605.
- [3] Nakamoto, K.: Infrac spectra of inorganic and coordination compounds, J. Wiley an Sons, inc. New York, 1986, 123-125, 231-233.
- [4] Lever, A.B.P.: Inorganic Electronic spectroscopy 2<sup>nd</sup> Edition, Elsevier, Amsterdam oxford, New York, Tokyo, 1984, 496.
- [5] Nelnick, J. and Dalbrgs, A.: Medical Microbiology Mc Graw Hill, USA, 2007.
- [6] Fieldler Hanspeter, Bruntner Christina, and Riedlinger Julia: The Journal of antibiotie 2008, 61, 158-163.
- [7] Ye B.H., Tolng M.L. and Chenx, M.: Metal organic molecular architecture with 2, bipyridyl-lihe and carboxylate ligands Coord. Chem. Rev. 2006, 249, 545-565.
- [8] Saidul Islam, M., Mossain, M.B., and Reza, NY. : Anti microbial studies of mixed ligan transition metal complexes of malic acid and heterocyclic amine basis J. of Med. Sci 2003, 3, 289-293.
- [9] Silverstein, R.M., and Webster, FX. Spectrometric identification of organic compound 6<sup>th</sup> Edn. John Wiley and Sons, INC, 2004.
- [10] Chohan, Z.H., and Supuran, C.T.: J. Enz. Inhib. Med. Chem., 2005, 20(5), 463-468.
- [11] Sundquist, W.T., and Lippard, S.J.: Cord. Chem... Rev., 1990, 100, 293.
- [12] Lindoy, L.F: The chemistry of macrocyclic ligand complexes, Cambridge Universit Press, Cambridge, 1989.
- [13] Curtis, N.F.: Coord. Chem. Rev., 1968.

- [14] Chandra, S. and Gupta, K.: Chromium(III), manganese(II), Iron(III), Cobalt(II), Nickel(II) and Copper(II) complexes with pentadentate, 15-membered new macrocyclic ligand. *Transition. Met. Chem.* 2002, 27, 196-199.



## UNDERSTANDING HOUSEHOLDS' VULNERABILITY TO FLOODS: A STUDY IN DHEMAJI DISTRICT OF ASSAM, INDIA

Rupon Basumatary\*

\*PhD,

Department of Economics,  
Cotton University, Guwahati, Assam, INDIA  
Email id: ruponbasur@rediffmail.com

### ABSTRACT

*The idea of vulnerability has recently emerged as a subject of academic interest and is used in both quantitative and qualitative sense in many fields, including disaster risk studies and climate change in particular. The term, however, has been defined differently but with common connotation to mean an ex-ante situation of risk in the context of some hazards. The present paper is based in Dhemaji district in the state of Assam, India. The district is one of the major flood hit districts in the state, with about 46.50% of its land area identified as flood hazard area. Based on the available conceptual frameworks, the paper tries to construct a vulnerability index to assess household level flood vulnerability for a sample of 151 households drawn from 10 flood prone villages belonging to two highly flood affected community development blocks in the district. The analysis shows that majority of the households have high vulnerability index, however with variation in terms of their individual vulnerability factors. Analysis of variance (ANOVA) shows that there are some homogenous sub-sets of villages, but with overall significant difference in the average household vulnerability across villages. The three household groups - households from 'low lying flood prone villages', from 'occasionally affected villages' and those from 'villages affected by river courses changes' – have significantly different vulnerability magnitude. Vulnerability reduction policy formulation needs differential approach to incorporate variation in the individual vulnerability factors rather than looking at the overall vulnerability magnitudes of the households.*

**KEYWORDS:** Households, Vulnerability, Floods, Dhemaji, Assam.

## INTRODUCTION

The idea of vulnerability has recently emerged as a subject of academic interest, with some researchers in the field developing conceptual frameworks to understand what constitutes vulnerability (Turner II *et al.*, 2013; Wisner *et al.*, 2003) while others implementing the frameworks empirically to analyse people's vulnerability to some contexts – mostly to natural hazards such as floods and droughts or to social phenomena like poverty (Chaudhury *et al.*, 2002; Jadotte, 2010; Balika, 2012; Balika *et al.*, 2012; Nasiri & Kalalagh, 2013; Mae Brigitt, 2014.). There is, however, no consensus as to what specific indicator variables should be considered in constructing vulnerability index; it rather depends on the context of the study, level of analysis such as household or community, availability of data and so on. Among others, empirical studies on flood vulnerability are seen to have built stock in literature (Balika, 2012; Balika *et al.*, 2012), however with different quantitative tools and techniques to measure vulnerability levels.

The idea of 'vulnerability' used in both quantitative and qualitative sense is gaining popularity in many fields including disaster risk studies (Watts & Bohle, 1993a; Bohle *et al.* 1994) and climate change, in particular (Kelly and Adger 2000, Downing *et al.* 2001; Barnett 2001, 2003). The term, however, has been defined differently but with common connotation to mean an *ex-ante* situation of risk in the face of some hazards; the concept being used to refer to the likelihood of harm to a system, or to degree of exposure to risk. Chambers (1989) defines vulnerability as – 'the exposure to contingencies and stress, and difficulty in coping with them'. This definition, thus, mentions two sides of vulnerability: an *external side* of risks, shocks and stress an entity is subjected to; and an *internal side* referring to a lack of means to cope without suffering loss. This definition also suggests three co-ordinates of vulnerability (Watts and Bohle, 1993b) - (a) the risk of exposure to crises, stress and shocks, (b) the risk of inadequate capacities to cope with stress, crises and shocks, and (c) the risk of severe consequences and of slow or limited recovery. Watts & Bohle (1993b) defines vulnerability in terms of *exposure, capacity and potentiality* according to which policy response to vulnerability in a normative sense is required to *reduce* exposure, *enhance* coping capacity, *strengthen* recovery potential and *bolster* damage controls via private and public means. Thus, despite of these varying definitions, vulnerability concept has three principal components implicit in all the definitions but with different nomenclatures. They are exposure, sensitivity, and coping and adaptive capacity (Wisner *et al.*, 2003; Adger, 2006). Turner II *et al.* (2003) too gives an expanded framework of vulnerability analysis having three factors – exposure, sensitivity and resilience. According to this framework, the human–environment conditions, which include both social and bio-physical capital, determine a given system's *sensitivity* to any set of *exposures*. These conditions also influence the existing coping mechanisms, which may be individual or autonomous action and/or policy-directed changes. Importantly, the coping mechanisms influence and affect each other, and sometimes give way to adaptation, which may bring about changes in human–environment conditions. The responses and their outcomes collectively determine the system's *resilience*.

The present paper puts in an effort to construct vulnerability index based on the available conceptual frameworks, and to analyses sample households' flood vulnerability in one severely flood hit district of Dhemaji in Assam state of India. According to Assam Flood Hazard Atlas (2011), about 46.50% of the district's land area constitutes flood hazard area. The district generally receives higher rainfall due to its geographical location of being in the foothills of neighbouring Arunachal Pradesh. Besides, its proximity to the hilly neighbouring state from

where many of the rivers flow through the district is a reason why floods in the district are likely to be different from those in many other places in the state. In this paper, attempts are being made to understand household level flood vulnerability in particular and also to see if the sample villages differ from each other in terms of their vulnerability magnitudes. Moreover, the paper seeks to understand if three household groups belonging to *low lying chronic flood prone villages*, *occasionally affected villages* and *villages affected by river course changes* respectively have statistically different vulnerability levels.

## DATA AND METHODS

### DATA

A sample of 151 flood prone households has been taken from 10 flood prone villages belonging to two development blocks in Dhemaji district in the state of Assam, India. Multi-stage sampling technique has been followed in drawing the sample households. While the sample households are randomly drawn, the selected villages, however, are purposively chosen, and based on flood proneness they are classified into three types: households from low lying chronic flood prone villages, from occasionally affected villages and those from villages affected by river course changes. The household level information has been collected using a pre-tested structured questionnaire designed for the purpose.

### CONSTRUCTING THE VULNERABILITY INDEX

The theoretical frameworks of vulnerability in general, as stated above, consist of three broad factors (Turner II *et al.* 2003): exposure, sensitivity and adaptive capacity or resilience. Household *exposure* depends on the proximity to river, frequency, duration and magnitude of previous flood events etc. Household *Sensitivity* depends on factors such as livelihood strategy, economic condition, demographic composition etc., while *adaptive capacity or resilience*, which is an immune against loss or damages, depends on the livelihood assets, institution, rules and so on. Based on the framework proposed by Turner II *et al.* (2003), the present analysis incorporates 27 indicator variables: Exposure (2 indicators), Sensitivity (12 indicators) and Resilience (13 indicators) (Appendix-I). These variables have been selected based on the availability of data, and their uses in some previous studies (e.g. Balika, 2012). Potential limitations may arise due to assigning of equal weights to the indicator variables used for constructing the index. Simple aggregation has been done because though the indicators are not equal to each other from psychological, theoretical or practical points of view, assigning of appropriate differential weights is not that easy. Besides, despite of the methods that are available for finding weights for such variables, they may not, however, reflect the priorities of the policy makers (Esty *et al.*, 2005). On the contrary, as Cutter *et al.* (2010) states, assigning of equal weights and simple aggregation make the things transparent and easy to understand. Thus, considering these points, equal weighting and simple aggregation procedure has been followed to construct the vulnerability index for the present study.

Recent vulnerability studies in general encompass social-economic component, institutional (politico-administrative) component, and hydro-geological component (Balika, 2012; Balika *et al.*, 2012; Nasiri & Kalalagh, 2013; Mae Brigitt, 2014). However, unlike other studies (e.g. Balika, 2012), in this study, the indicator variables here are broadly classified into the three main factors of vulnerability without an effort to analyse vulnerability at sub-component scales separately. Instead, vulnerability in aggregate has been focussed on by incorporating vulnerability indicators representing *socio-economic* and *institutional* components only, while



excluding geo-morphological or climatological aspects for their infeasibility (at least for the present study) from technical viewpoints. The construction of vulnerability index has been done in two stages:

**First**, based on the selected 27 indicator variables as defined in Appendix-I, index for each of the three vulnerability factors has been constructed for each household. The  $j^{\text{th}}$  factor index for the  $i^{\text{th}}$  household is defined as-

$$\text{Factor Index}_{ji} = \text{Score}/\text{max score}$$

The maximum score for exposure index (EI) is 10 while for Sensitivity index (SI) it is 12, and for resilience index (RI) it is 13. Thus, the  $j^{\text{th}}$  factor index of the  $i^{\text{th}}$  household can take minimum value of 0 and maximum of 1.

**Second**, the above three individual factor indices i.e. EI, SI and RI are combined to construct an overall vulnerability index (VI) for each household such that the calculated index value lies between 0 and 1. Vulnerability index for the  $i^{\text{th}}$  household is calculated as-

$$\text{Vulnerability Index (VI)}_i = [EI_i + SI_i + (1 - RI_i)]/3$$

The vulnerability index of the  $i^{\text{th}}$  household ( $VI_i$ ) constructed above takes on value 0 if  $EI_i = SI_i = 0$  and  $RI_i = 1$ . On the other hand,  $VI_i = 1$  if  $EI_i = SI_i = 1$  and  $RI_i = 0$ .

The village level vulnerability index (VI) is then calculated by taking arithmetic mean of the household index values ( $VI_i$ ). The village level analysis is done using one-way ANOVA. This analysis has been carried out to see if there is statistically significant difference in mean VI of households across villages. Another objective of the analysis here is to understand if three household groups belonging to *low lying chronic flood prone villages*, *occasionally affected villages* and *villages affected by river course changes* respectively have statistically different vulnerability levels. For convenience, a descriptive summary of the indicator variables has been presented in Appendix-II.

## RESULTS AND DISCUSSION

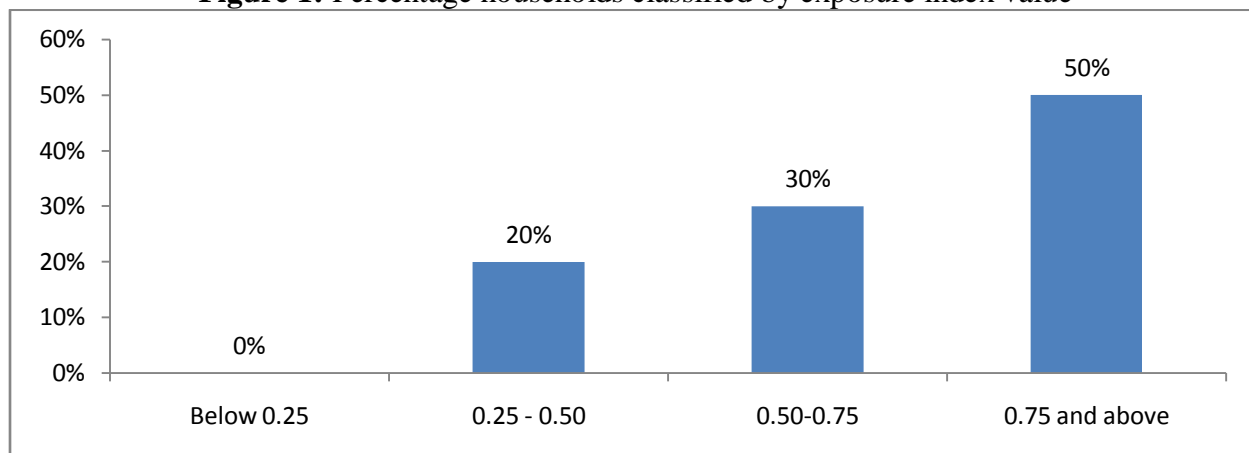
### HOUSEHOLD EXPOSURE TO FLOODS

The nature and magnitude of household exposure to hazards is an important determinant of the degree of household vulnerability. The difference in exposure makes two similar systems or subjects differently vulnerable. Exposure to floods, in particular, can be studied by looking at the household's distance from flood sources, frequency, duration and magnitudes of past events and so on. However, as already stated in the preceding sections of the study, depending on the availability of data from the field, only two indicators – '*number of years affected by floods in the last five years*' and '*number of years being temporarily dislocated by floods in the last five years*' – are taken to measure household exposure to flood. Flood being a covariate risk, minor variations of household responses to these indicators can be expected. By living in the same locality and bounded by social bonding, people in a particular village are almost equally exposed to floods, when it is measured in terms of these two indicators. Field based data analysis shows that 20% of the sample households have exposure index of 0.25-0.50; 30% households between 0.50 and 0.75, while the remaining 50% households have exposure index of 0.75 or higher (Table-1). The percentage of the households by exposure index is presented in Figure 1.

**TABLE-1: CLASSIFICATION OF VILLAGE/HOUSEHOLDS BY EXPOSURE INDEX VALUE**

| Exposure Index | No. of villages | Households |
|----------------|-----------------|------------|
| Below 0.25     | NIL             | 0%         |
| 0.25 - 0.50    | 2               | 20%        |
| 0.50-0.75      | 3               | 30%        |
| 0.75 and above | 5               | 50%        |

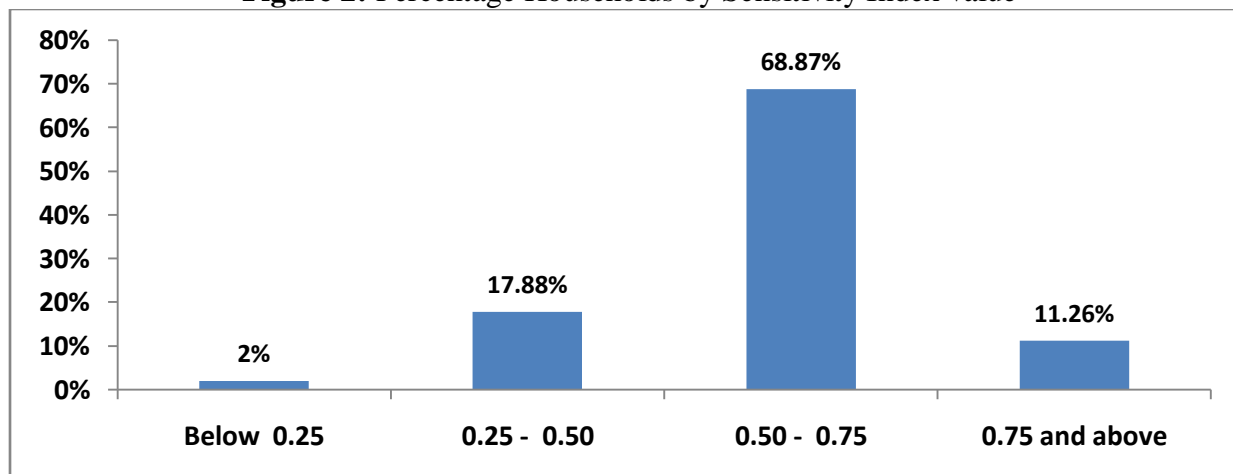
**Source:** Author's calculation from the field survey data

**Figure 1:** Percentage households classified by exposure index value

**Source:** Author's calculation from the field survey data

### HOUSEHOLD SENSITIVITY TO FLOODS

Classification of the households by sensitivity index (Figure 2) shows that while 2% households have sensitivity index value less than 0.25, the cumulative proportion of the households having index value less than 0.50 is 19.88%. The remaining 80.12% households have sensitivity index value equal to 0.50 and higher. Among them 11.26% households have much higher sensitivity index value of 0.75 and above.

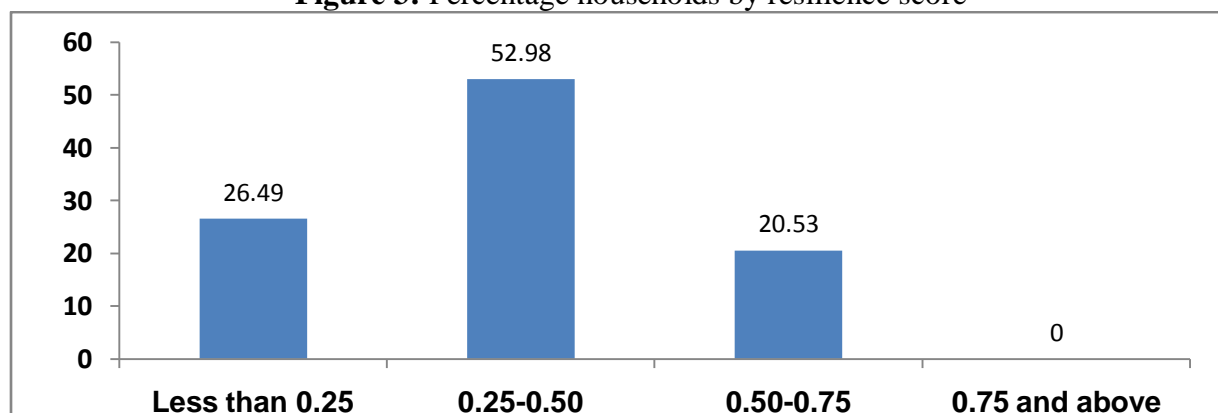
**Figure 2:** Percentage Households by Sensitivity Index value

**Source:** Author's calculation from the field survey data

## RESILIENCE OF THE HOUSEHOLDS

Computation of resilience score (Figure 3) based on 13 indicators shows that 79.47% of the households have resilience score less than 0.5, of which 26.49% households having resilience score less than 0.25 and 52.98% households having score between 0.25 and 0.50. While 20.53% households have resilience score between 0.50 and 0.75, none of the households has resilience score equal to 0.75 and above.

**Figure 3:** Percentage households by resilience score



**Source:** Author's calculation from the field survey data

## OVERALL VULNERABILITY INDEX

As already stated in the preceding sections, vulnerability index of each household is computed using the three factor indices – EI, SI and RI – such that the index value is normalised between 0 and 1. The computed values are presented in Table 2.

**TABLE-2: VILLAGE AND HOUSEHOLDS BY VULNERABILITY INDEX VALUE**

| Vulnerability Index | No. of villages | No. of Households | Percent Households |
|---------------------|-----------------|-------------------|--------------------|
| Below 0.25          | NIL             | NIL               | NIL                |
| 0.25 - 0.50         | 02              | 28                | 18.54              |
| 0.50-0.75           | 06              | 98                | 64.90              |
| 0.75 and above      | 02              | 25                | 16.56              |

**Source:** Author's calculation from the field survey data

The table shows that none of the households has vulnerability score less than 0.25. The proportion of households with vulnerability index between 0.25 and 0.50 is 18.54%. Thus, cumulative proportion of households having vulnerability index less than 0.5 is 18.54%. The largest proportion of the households (64.90%) has vulnerability index value between 0.50 and 0.75. The remaining 16.56% households have vulnerability index value equal to 0.75 and higher.

## ANOVA RESULTS

A one way ANOVA is carried out to examine the difference, if any, in the mean vulnerability index across villages. Theoretically, ANOVA assumes 'normality' of the dependent variable *within* the group and 'equal variance' *across* groups. Data adequacy tests such as S-K and S-W tests for normality, and Levene's test of equal variance fail to reject the assumptions of normality and equal variance respectively. Levene's statistics is found to be 1.188 with p-value 0.307.

ANOVA output (Appendix-III) shows an overall significant difference in mean vulnerability scores across villages. The  $F(9, 141)$  value is found 106.614 with  $p$  value less than 0.001.

Tukey HSD post-hoc analysis produces four sub-groups of homogeneous villages (Table 3): (Jamuguri, Bijoypur), (Brahmapur), (Gaurangapur, Santipur, Uluwani, Naokata, Goroimari) and (Kusergaon, Medhipamua). These homogenous subsets of villages are statistically significantly different from each other at 5% significance level. Thus, while there is no statistically significant intra-group difference in mean vulnerability, one group significantly differs from the others.

Further, a one-way ANOVA analysis of mean difference is conducted for the three groups of villages: **Group-1:** Villages affected by river course changes: Goroimari, Gaurangapur; **Group-2:** Low lying chronic flood-prone villages: Santipur, Naokata, Kusergaon, Medhipamua, Uluwani; **Group-3:** occasionally affected villages: Brahmapur, Jamuguri, and Bijoypur. Though within group normality assumption is satisfied for this analysis, the current data does not pass the between group equal variance test. Hence, ANOVA has been conducted with unequal variance assumption. ANOVA result shows significant difference in mean vulnerability index of these village groups. The  $F(2, 148)$  is 170.896 with  $p$  value less than 0.001. The effect size is found to be 0.698. Games-Howell post-hoc test with unequal variance assumption shows that **Group-1** villages significantly differ from **Group-2** and **Group-3** with  $p$  values less than 0.05 and 0.001 respectively. Similarly, **Group-2** differs statistically significantly from **Group-3** villages with  $p$  value less than 0.001. Thus, these three groups differ significantly from each other (Table-4).

**TABLE-3: ANOVA POST-HOC TEST RESULTS**

| Village <sup>#</sup> | Subset for alpha = 0.05 |          |          |          |      |
|----------------------|-------------------------|----------|----------|----------|------|
|                      | Column-1                | Column-2 | Column-3 | Column-4 |      |
| Jamuguri             | 0.41                    |          |          |          |      |
| Bijoypur             | 0.44                    |          |          |          |      |
| Brahmapur            | 0.56                    |          |          |          |      |
| Santipur             |                         |          |          |          | 0.63 |
| Goroimari            |                         |          |          |          | 0.67 |
| Uluwani              |                         |          |          |          | 0.67 |
| Naokata              |                         |          |          |          | 0.68 |
| Gaurangapur          |                         |          |          |          | 0.68 |
| Kusergaon            | 0.75                    |          |          |          |      |
| Medhipamua           |                         |          |          |          | 0.78 |
| Sig.                 | .724                    | 1.000    | .090     | .885     |      |

**Source:** Author's calculation from the field survey data; **Note:** Mean values for groups in homogeneous subsets are displayed; <sup>#</sup>the vulnerability index of villages increases from column-1 to column-4.

**TABLE-4: COMPARISON OF MEAN DIFFERENCE ACROSS GROUPS<sup>#</sup>**

| Comparison Groups   | Mean difference and Standard Errors |
|---------------------|-------------------------------------|
| Group-1 Vs. Group-2 | -.02636** (.01070)                  |
| Group-1 Vs. Group-3 | .20325*** (.01335)                  |
| Group-2 Vs. Group-3 | .22961*** (.01406)                  |

**Source:** Author's calculation from the field survey data; **Note:** \*\*, \*\*\* imply significant at 5% and 1% level respectively; <sup>#</sup>Figures in parenthesis are standard errors

## CONCLUSION AND POLICY IMPLICATIONS

To conclude, the study shows that majority of the households are characterised with moderate to high degree of vulnerability, with about 82% of the households having vulnerability index of 0.5 or higher. The vulnerability levels are also found to differ across villages. Moreover, the three household groups viz. Households in low lying chronic flood prone villages, occasionally flood affected villages and the villages affected by river course changes differ from each other in terms of their mean vulnerability magnitudes. Despite all these, a policy initiative that focuses only on the vulnerability magnitude will in no way be suitable approach to address the issue. Rather, the variation across the vulnerability factors needs to be considered while designing such policies, as for villages with the same vulnerability levels there are some which have high exposure index, while others being high in sensitivity index, thus making them different from each other.

## DISCLAIMER

The research paper is based on the author's PhD thesis titled '*Flood and Socio-Economic Livelihoods of People in Dhemaji District of Assam*' submitted to Gauhati University, Assam, in 2017. However, the usual disclaimer applies.

## REFERENCES:

- Adger, W. N. (2003) Social Capital, Collective Action and Adaptation to Climate Change, *Economic Geography*, 79(4): 387-404
- Balica, S. F (2012) 'Applying the Flood Vulnerability Index as a Knowledge Base for Flood Risk Assessment', PhD Thesis, UNESCO-IHE & Delft University of Technology, the Netherlands
- Balica, S. F., N. G. Wright and F. van der Meulen (2012) A Flood Vulnerability Index for Coastal Cities and its Use in Assessing Climate Change Impacts, *Natural Hazards*, 64(1): 73–105
- Barnett, J. (2001) Adapting to Climate Change in Pacific Island Countries: The Problem of Uncertainty, *World Development*, 29(6):977-993
- Barnett, J. (2003) Security and Climate Change, *Global Environmental Change*, 13(1):7-17.
- Bohle, H. G., T. E. Downing, and M. Watts (1994) Climate Change and Social Vulnerability: The Sociology and Geography of Food Insecurity, *Global Environmental Change* 4(1):37-48.
- Chambers R. (1989) Editorial Introduction: Vulnerability, Coping and Policy, *Institute of Development Studies (IDS) Bulletin*, 20 (2):1–7
- Chaudhuri, S., J. Jalan, and A. Suryahadi (2002) Assessing household vulnerability to poverty from cross-sectional data: A methodology and estimates from Indonesia, Columbia University Academic Commons, <https://doi.org/10.7916/D85149GF>
- Cutter, S. L., Christopher G. Burton & Christopher T. Emrich (2010) Disaster Resilience Indicators for Benchmarking Baseline Conditions, *Journal of Homeland Security and Emergency Management*, Volume 7, Issue 1, Article-51
- Downing, T.E., Aerts, J., Soussan, J., Barthelemy, O., Bharwani, S., Ionescu, C., Hinkel, J., Klein, R.J.T., Mata, L.J., Martin, N., Moss, S., Purkey, D. and Ziervogel, G. (2006) 'Integrating

social vulnerability into water management' Stockholm Environment Institute (SEI) Working Paper and Newater Working Paper No. 4. Oxford: Stockholm Environment Institute.

Esty, D.C., M. Levy, T. Srebotnjak and A. de Sherbinin (2005) *Environmental Sustainability Index: Benchmarking National Environmental Stewardship*, New Haven: Yale Center for Environmental Law & Policy

Jadotte, E. (2010) Vulnerability to Poverty: A Microeconomic Approach and Application to the Republic of Haiti; Departament d'Economia Aplicada, Universitat Autònoma de Barcelona, retrieved from [https://ddd.uab.cat/pub/estudis/2010/hdl\\_2072\\_87971/wpdea1004.pdf](https://ddd.uab.cat/pub/estudis/2010/hdl_2072_87971/wpdea1004.pdf) on 1/2/2018

Kelly, P. M., and W. M. Adger (2000) Theory and Practice in Assessing Vulnerability to Climate Change and Facilitating Adaptation, *Climatic Change*, 47 (4):325-352.

Mae Brigitt Bernadel Villordon (2014) 'Community-Based Flood Vulnerability Index for Urban Flooding: Understanding Social Vulnerabilities and Risks', PhD Thesis, Université Nice Sophia Antipolis, France, online: <https://tel.archives-ouvertes.fr/tel-01128335/document> [Accessed on 5/2/2017]

Nasiri, H., & S. S. Kalalagh (2013) Flood vulnerability index as a knowledge base for flood risk assessment in urban area, *Journal of Novel Applied Sciences*, 2 (8): 269-272

Turner II, B.L.; Roger E. Kasperson, Pamela A. Matson, James J. McCarthy, Robert W. Corell, Lindsey Christensen, Noelle Eckley, Jeanne X. Kasperson, Amy Luers, Marybeth L. Martello, Colin Polsky, Alexander Pulsipher, and Andrew Schiller (2003) A Framework for Vulnerability Analysis in Sustainability Science, *Proceedings of the National Academy of Sciences*, 100(14): 8074–8079

Watts, Michael J. & Bohle, Hans G. (1993a): Vulnerability, Hunger and Famine, *Geo. Journal* 30(2): 117-125

Watts, Michael J. & Bohle, Hans G. (1993b): The space of vulnerability: the causal structure of hunger and famine, *Progress in Human Geography*, 17(1): 43-67

Wisner, B., P. Blaikie, T. Cannon, I. Davis (2003) *At Risk. Natural Hazards, People's Vulnerability and Disasters*, Routledge: London

## Appendix-I

Indicator variables used in the construction of vulnerability index

| Factors of Vulnerability | Variable/ aspect  | Indicators  | Indicator Coded as | Factor Score |
|--------------------------|-------------------|---|--------------------|--------------|
| Exposure (2)             | Flood Frequency   | - Number of years affected in the last five years (Max = 5)                     | FLOOD_FREQ         | Score/10     |
|                          | Magnitude         | - Number of years temporarily dislocated during the last five years (max = 5)** | FLOOD_MAGNITUDE    |              |
|                          |                   |   |                    |              |
|                          | Household Economy | - Principally farming households (1 = Yes, 0 otherwise)                         | FARM               |              |



|  |                                       |   |                  |          |
|--|---------------------------------------|---|------------------|----------|
| Sensitivity<br>(12)                                      | Demography                            | - children age 0-5 years (yes =1, 0 otherwise)                      | CHILD            | Score/12 |
|  | Amenity                               | - Own source of water*<br>(No =1, yes =0)                           | NO_WAT_SOURC     |          |
|  | Early Warning                         | - TV (No =1, 0 otherwise)*  | NO_TV            |          |
|  |                                       | - Radio (No =1, 0 otherwise) *                                      | NO_RADIO         |          |
|  |                                       | - Phone (No=1, 0 otherwise) *                                       | NO_PHONE         |          |
|  | Access to financial resources         | - Bank Account (No=1, 0 otherwise) *                                | NO_BANK_A/C      |          |
|  |                                       | - membership in SHG (No=1, 0 otherwise) *                           | NO_MEMB_SHG      |          |
|  |                                       | - regular savings (No=1, 0 otherwise) *                             | NO_REG_SAV       |          |
| - health or life insurance policies (No=1, 0 otherwise)* |                                       | NO_INSUR  |                  |          |
| Social Safety Nets                                       | - access to PDS (No=1, 0 otherwise) * | NO_PDS  |                  |          |
| Tools  | - boat (No=1, 0 otherwise) *          | NO_BOAT   |                  |          |
| Resilience<br>(13)                                       | Flood Damages                         | - House damage in the last major flood (NO=1, Yes =0) <sup>#</sup>  | NO_HOUS_DAMAGE   | Score/13 |
|  |                                       | - Crop Damage (No =1 Yes =0) <sup>#</sup>                           | NO_CROP_DAMAGE   |          |
|  |                                       | - Land damaged (No =1, Yes =0) <sup>#</sup>                         | NO_LAND_DAMAGE   |          |
|  |                                       | - livestock loss (No =1, Yes =0) <sup>#</sup>                       | NO_LIVSTOCK_LOSS |          |
|  |                                       | - Illness during last flood (No =1, Yes =0) <sup>#</sup>            | NO_ILLNESS       |          |
|  | Infrastructure facilities             | - Access to raised platform/Dam or dyke/High Roads (Yes =1, No =0)  | HIGH_PLACES      |          |
|  |                                       | - Access to all weather roads (Yes =1, No =0)                       | ALL_WEATHER_RD   |          |
|  |                                       | - Preventive Measures undertaken (Yes =1, No =0)                    | PREVENT_MSR      |          |
|  | Access to Relief Aids                 | - Received relief items (Yes =1, No =0)                             | RCVD_RELIEF      |          |
|  |                                       | - Health services provided during last major floods (Yes =1, No =0) | HEALTH_SERVICE   |          |
|  |                                       | - Veterinary Services during last major floods (Yes =1, No =0)      | VET_SERVICE      |          |

|  |                    |  |               |
|--|--------------------|--|---------------|
|  | Housing Adaptation | - Stilt/raised house=1, Raised house Platform =0.5, no = 0 | HOUSE_ADAPTED |
|  | Social Capital     | - Community Granary (Yes =1, No =0)                        | COMM_GRANARY  |

**Notes:** \*Scale reverted. Because, absence of these items reflects higher *sensitivity* i.e. vulnerability; #Scale reverted. Because absence of these items reflect higher *resilience* i.e. less vulnerability; \*\* for the households who were dislocated, but did not go to the relief camps, value 0.5 is given.

#### Appendix-II: Summary Statistics of variables

##### A. Indicators of flood exposure

| Variable        | Obs | Mean      | Std. Dev. | Min | Max |
|-----------------|-----|-----------|-----------|-----|-----|
| FLOOD_FREQ      | 151 | 0.7615894 | .2505623  | .4  | 1   |
| FLOOD_MAGNITUDE | 151 | 0.6397351 | .34119    | .1  | 1   |

##### B. Sensitivity Indicators:

| Variable     | Obs | Mean     | Std. Dev. | Min | Max |
|--------------|-----|----------|-----------|-----|-----|
| FARM         | 151 | .397351  | .4909782  | 0   | 1   |
| CHILD        | 151 | .5165563 | .5013888  | 0   | 1   |
| NO_WAT_SOURC | 151 | .1788079 | .3844666  | 0   | 1   |
| NO_TV        | 151 | .9536424 | .2109581  | 0   | 1   |
| NO_RADIO     | 151 | .9933775 | .0813788  | 0   | 1   |
| NO_PHONE     | 151 | .0993377 | .3001104  | 0   | 1   |
| NO_BANK_A/C  | 151 | .3178808 | .4672025  | 0   | 1   |
| NO_MEMB_SHG  | 151 | .5430464 | .4998013  | 0   | 1   |
| NO_REG_SAV   | 151 | 1        | 0         | 1   | 1   |
| NO_INSUR     | 151 | .8609272 | .347174   | 0   | 1   |
| NO_PDS       | 151 | .0596026 | .237537   | 0   | 1   |
| NO_BOAT      | 151 | .7019868 | .4589074  | 0   | 1   |

##### C. Resilience Indicators

| Variable        | Obs | Mean     | Std. Dev. | Min | Max |
|-----------------|-----|----------|-----------|-----|-----|
| NO_HOUS_DAM     | 151 | .2913907 | .4559153  | 0   | 1   |
| NO_CROP_DAM     | 151 | .1192053 | .3251082  | 0   | 1   |
| NO_LAND_DAM     | 151 | .5033113 | .5016529  | 0   | 1   |
| NO_LIVSTOK_LOSS | 151 | .4635762 | .500331   | 0   | 1   |
| NO_ILLNESS      | 151 | .2317881 | .4233786  | 0   | 1   |
| HIGH_PLACES     | 151 | .8013245 | .400331   | 0   | 1   |
| ALL_WEATHER_RD  | 151 | .2980132 | .4589074  | 0   | 1   |
| PREVENT_MSR     | 151 | .205298  | .4052634  | 0   | 1   |
| RCVD_RELIEF     | 151 | .794702  | .4052634  | 0   | 1   |
| HEALTH_SERVIC   | 151 | 0        | 0         | 0   | 0   |
| VET_SERVICE     | 151 | 0        | 0         | 0   | 0   |
| HOUSE_ADAPTED   | 151 | .4470199 | .4731184  | 0   | 1   |
| COMM_GRANARY    | 151 | .602649  | .4909782  | 0   | 1   |

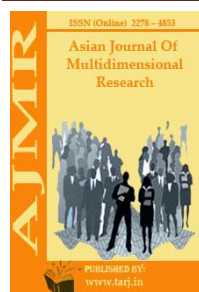
Source: Author's calculation from the field survey data

**Appendix-III: ANOVA results of mean comparison**

|             | Medhipamua        | Goroimari          | Bijoypur           | Brahmapur          | Naokata           | Uluwani           | Santipur          | Jamuguri         | Kusergaon         | Gaurangapur |
|-------------|-------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|------------------|-------------------|-------------|
| Medhipamua  | .093***<br>(.017) | -.017<br>(.017)    | -.240***<br>(.017) | -.125***<br>(.017) | -.006<br>(.017)   | -.012<br>(.017)   | -.049*<br>(.016)  | 270***<br>(.017) | .068***<br>(.017) | --          |
| Goroimari   | .025<br>(.017)    | -.085***<br>(.017) | -.308***<br>(.017) | -.193***<br>(.017) | .073**<br>(.017)  | .080**<br>*(.017) | .117***<br>(.016) | 338***<br>(.017) | --                | Kusergaon   |
| Bijoypur    | .363***<br>(.017) | .253***<br>(.017)  | .030<br>(.017)     | .145***<br>(.017)  | .264**<br>*(.017) | .258**<br>*(.017) | .221***<br>(.016) | --               |                   | Jamuguri    |
| Brahmapur   | .142***<br>(.016) | .032<br>(.016)     | -.191***<br>(.016) | -.076***<br>(.016) | .044<br>(.016)    | .037<br>(.016)    | --                |                  |                   | Santipur    |
| Naokata     | .105***<br>(.017) | -.005<br>(.017)    | -.228***<br>(.017) | -.113***<br>(.017) | .006<br>(.017)    | --                |                   |                  |                   | Uluwani     |
| Uluwani     | .098***<br>(.017) | -.012<br>(.017)    | -.235***<br>(.017) | -.120***<br>(.017) | --                |                   |                   |                  |                   | Naokata     |
| Santipur    | .218***<br>(.017) | .108***<br>(.017)  | -.115***<br>(.017) | --                 |                   |                   |                   |                  |                   | Brahmapur   |
| Jamuguri    | .333***<br>(.017) | .223***<br>(.017)  | --                 |                    |                   |                   |                   |                  |                   | Bijoypur    |
| Kusergaon   | .110***<br>(.017) | --                 |                    |                    |                   |                   |                   |                  |                   | Goroimari   |
| Gaurangapur | --                |                    |                    |                    |                   |                   |                   |                  |                   | Medhipamua  |

**Source:** Field survey data; **Note:** Figures in Parenthesis are standard errors

\*, \*\*, \*\*\* represent significance at 10%, 5% and 1% respectively; Difference calculated as (Row village – Column village)



## MATERNAL HEALTH SERVICES AND DALIT WOMEN: A FIELD STUDY IN ODISHA

Dr. J. Rani Ratna Prabha\*; SudamTandi\*\*

\*Assistance Professor,  
Centre for the Study of Social Exclusion and Inclusive Policy,  
School of Social Science, University of Hyderabad, INDIA.  
Email id: rani\_hcu@yahoo.com

\*\*Research Scholar,  
Centre for the Study of Social Exclusion and Inclusive Policy,  
School of Social Science, University of Hyderabad, INDIA.  
Email id: sudamtandimsw@gmail.com

### ABSTRACT

**Background:** The main purpose of the field study is to explore the maternal health care of the Dalit women in Odisha, especially with regard to the ways in which they receive comprehensive health care services during and after pregnancy. The study focused on the Dalit women of Balangir district in Odisha who are untouchable by their caste. **Objectives:** The major objectives of the study are two: firstly, it is to explore the impact of the governmental intervention on maternal health care accessibility for Dalit women in rural areas of Odisha and secondly, to assess caste system and social structure which determines accessibility of maternal health service for Dalit women in Odisha. **Methodology:** The direct interview was conducted with Dalit women who are a mother of below five years old child. **Results:** the major findings are, antenatal care and postnatal care was not properly received by the major percentage of the Dalit women due to inadequate information, ignorance and caste factor. Regarding of ANC services, 7.5 percent and 10 percent of respondents one and two times visited for ANC services and did not know the idea of the ANC service, respectively. With regard to PNC visits, 22.2 percent of the respondents, they did not receive PNC service in the study. The institutional delivery has been not improved despite governmental programmes and 30 percent of respondents were delivered baby at their home. Moreover, the function of ASHA, Anganwadi worker, and ANM are more important in providing health care services to them but the caste discrimination acts as an obstruction in providing a comprehensive maternal health care

*services to the women. Conclusion: Paper reveals that maternal health care services are insufficient, because of the caste system and the poor economic status of Dalit communities.*

**KEYWORDS:** *Dalit Women, Ante-Natal Care, Post-Natal Care, Maternal Health, Institutional Delivery*

---

## **INTRODUCTION**

The idea of maternal health care involves pre-conception, prenatal and post-natal care of women. Pre-natal care is the comprehensive health care taken during pregnancy where women receive and provide health care for themselves. It is assumed by the various studies that women who begin prenatal care early in their pregnancies have better birth outcomes than women who receive little care during their pregnancies. Post-natal care, which includes issues like recovery from childbirth, concerns about new-born care, nutrition, breastfeeding, and family planning etc. becomes very significant. Pregnancy care should be a major concern in order to deal with the complexities arising in this time period. Therefore, it becomes very crucial to look into the problems during motherhood in order to have a healthy new-born, which will, in turn, contribute to a healthy society. In the context of maternal health issues, maternal mortality is at a dubious detention due to neglected biological and socio-economic factors like medical infrastructure, poverty, education, cultural norms, and remoteness of the area and caste system for lower caste people.( Linda Sanneving et al, 2013)

A high incidence of maternal mortality causes huge loss of human life and social welfare. In most cases, the deaths and risky health issues of pregnancy occur from preventable causes. A large proportion of women are reported to have received no ante-natal care at all. Additionally, in India, institutional delivery is lowest among women from the lower economic class as against those from the higher class. With 61 percent of maternal deaths belonging to Dalit and tribal communities, it can be understood that caste-based discrimination still plays an important role in creating the unfair burden of maternal deaths among Dalit communities. These caste-based factors including lack of access to contraception, differences in education or economic status, gender discrimination at their own home and physiological factors all put Dalit women at risk in experiencing maternal health problems even before complications begin. (B, Simrun,2013) Against this background, this paper focus on maternal health care access of Dalit women, how they are using this service caste-ridden society where the caste prevents to access their basic human rights to health care service?

## **REVIEW OF LITERATURE**

Shah G, et al (2006) noted with regard to maternal health care services, Dalit women deals with the government officials most frequently when they seek health services for themselves and for their children. The village Anganwadi worker, ASHA (Accredited Social Health Activist) and ANM (auxiliary nurse-midwife) discriminate against them while they provide maternal healthcare service. Dalit women from Sanjhiki, Bahabal and Randa villages of north Odisha say that upper caste Anganwadi worker does not allow to enter the Anganwadi centre. The other part of Odisha reports that Dalit women in Munda village, central Odisha, here the Anganwadi worker is Adivasi where she does not visit the Dalit hamlets and refuse to let them enter the centre. Dalit women from central Odisha revealed that Anganwadi worker asked for some money for their service.



Thorat, ( 2010 ) described in his work that in India, 52 per cent of women in the reproductive ages are anaemic; 35 per cent mildly anaemic; and 17 per cent moderately or severely anaemic (below 10.0 grams/decilitre). However, in a few states like Punjab, Karnataka, West Bengal, Orissa, and Bihar, there exists a large gap of over five per cent. The SCs and STs also indicate higher levels of moderate or severe anaemia, but the gap between the SCs (18.8 per cent) and the non-SC/STs (15.4 per cent) was quite narrow. In Orissa, the incidence of anaemia among Dalit was 21 per cent and among ST it was 25 per cent. In case of non-SC/STs, it was 15 per cent.

Post-delivery care is equally crucial to improve maternal health as assistance during delivery as a majority of maternal deaths take place during these two stages. In fact, the maternal deaths are highest due to post-natal care complications and 60 per cent of all maternal deaths occur after delivery (WHO, 2000, as cited in Singh, et al, 2012). A continuum of care throughout pregnancy and the postpartum duration is critically vital in India because mothers and infants are liable to a number of health risks due to the vicious cycle of malnutrition and poverty and caste system acting as a disadvantage to most. The Post-Natal Care inequality and the coverage of essential PNC is inadequate, especially for mothers from economically disadvantaged households (Singh, et al, 2012). According to a study in Maharashtra, post-natal care received by women who are SCs, STs and other is 15.8 per cent, 27.7 per cent and 56.5 per cent respectively (Padhye, et al, 2013 ).

Two important programmes deal with maternal health care services are National Rural Health Mission (NRHM) and Reproductive Child Health –II in India. This paper is based on the schemes which cater health care service to weaker sections, especially focused on Dalit women in Odisha. The NRHM (2005) programme was aimed at providing accessible, affordable, accountable and reliable primary health care facilities, especially to the poor and vulnerable sections of the population. The second aim of the scheme was to bridge the gap in rural healthcare through the creation of a cadre of Accredited Social Health Activist (ASHA) and improved hospital care, decentralization of programmes to the district level to improve intra and inter-sectorial convergence and utilization of the resource. Thirdly, this scheme is the convergence of different programmes like Malaria, Blindness, Iodine deficiency, Filariasis, Kala-Azar, Tuberculosis, Leprosy and rural disease. (4) Similarly, the RCH and RCH- II programme services for ante-natal care includes at least three antenatal care visits, iron prophylaxis for pregnant and lactating women, at least one dose of tetanus toxoid vaccine, detection and treatment of anaemia in mothers, and management and referral of high-risk pregnancies and natal care, that is encouragement of safe delivery, post-natal care, and management of unwanted pregnancies. (5) Therefore, this paper argues how these two programmes impact Dalit women, with reference to receiving maternal health care service in Odisha?

This paper argued how Dalit women are deprived of maternal health care based on their caste identity and also their inability of accessing to the communication, information and advice by healthcare personnel like ASHA, ANM and Anganwadi workers on maternal healthcare service. However, this is the study of negligence of healthcare personnel towards the underprivileged.

### **THE OBJECTIVE OF THE STUDY**

This paper has two main objectives; firstly, to analyse the impact of governmental intervention on maternal health care accessibility for Dalit women in rural Odisha of Balangir district. The second objective is to assess caste system and social structure which determines the accessibility of maternal health care services for Dalit women in the selected areas.

## **METHODOLOGY**

The study was conducted at Balangir district of Odisha. It is based on both primary and secondary data. The direct interviews were conducted among Dalit women who have a child below five years of age. All selected Dalit women are untouchables and their castes are Ganda, Ghasi, and Chamar which were named as lower caste category in western Odisha. The study was conducted in the year 2016 and the properly structured interview schedule was used to collect primary data on the problems faced by the Dalit women before and after delivery.

Accordingly the researcher collected the data of the Dalit women in the concerned village of the district by consulting an Anganwadi worker. The purposive sampling method had applied to get the required information about the selected Dalit women of the district. The total 80 Dalit women were selected from three Blocks of the District. They were interviewed in detail about their reproductive behavior and intentions, reproductive and child health, ante-natal care (ANC), institutional delivery and post-natal care (PNC), services of the schemes NRHM and RCH-II (Reproductive Child Health) being run by the state as well as the central governments. The primary focus of the research was to analyse the health status of Dalit women especially problem related to pregnancy, pre-natal and post-natal care, and caste-based discrimination by ANM, ASHA, and Anganwadi workers during healthcare service.

## **AREA OF THE STUDY**

The present study was conducted at Balangir district of Odisha covering three Block namely Balangir, Loisinga and Partnagarh. Under the Balangir Block, the four villages were undertaken for the study; the villages were Barapudugia, Kermeli, Bandhanghore and Sialbahali. Under Loisinga Block, four villages were G.S. Dungguipali, Kaindapali, Bagdunguri and Tapalbanji. Under Partnagarh Block, the selected villages were Rengtasil, Bhallupita, Khuntsamalei and Gandamel for the study area.

## **RESULTS OF STUDY**

The following are the socio economic status of the respondents and their maternal health status in the study area.

## **SOCIO-ECONOMIC PROFILE OF RESPONDENTS IN THE STUDY AND ITS MAJOR FINDINGS**

According to the District Statistical Handbook, in 2011, the Schedule Caste population of Balangir district was 17.88 percent. The total literate population was 64.72 percent. Male literates are 75.85 percent and female literacy 53.50 percent. With regard to Schedule Caste population, literacy is 63.42 percent and out of them male literates is 74.23 percent and a female literate is 52.52 percent. During the fieldwork of table no :1, it was found that when it comes to the educational status of Dalit women, 41.3 percent of them are illiterate and the illiteracy of their husbands stood at 40 percent. Different existing literature argues that the women of educated and employed husbands have better utilization of maternal care than those married to illiterate and unemployed men. Low maternal health status was found in women whose husbands were either illiterate or semi-illiterate and do not understand the complication and needs during a different stage of pregnancy, which may even lead to the death of women, so the following table 1 details are presented the literary status of the Dalit women and their spouse.

**TABLE NO: 1 EDUCATIONAL STATUS OF THE RESPONDENTS AND THEIR SPOUSE**

| Educational Status | No of                 | Percent | No of                    | Percent |
|--------------------|-----------------------|---------|--------------------------|---------|
|                    | Respondents<br>(Wife) |         | respondents<br>(Husband) |         |
| Illiteracy         | 33                    | 41.3    | 32                       | 40.0    |
| Primary            | 20                    | 25.0    | 23                       | 28.8    |
| Secondary          | 24                    | 30.0    | 21                       | 26.3    |
| Graduation         | 3                     | 3.8     | 4                        | 5.0     |
| Total              | 80                    | 100.0   | 80                       | 100.0   |

Source: Primary source, 2016

**TABLE NO 2: SOCIO-ECONOMIC CONDITION OF RESPONDENTS**

| <b>Possession of Land By Respondents</b>                |                              |                |
|---|------------------------------|----------------|
| <b>Possession of land</b>                               | <b>Number of Respondents</b> | <b>Percent</b> |
| No land   | 48                           | 60.0           |
| Below two-acre land                                     | 23                           | 28.8           |
| More than two-acre land                                 | 9                            | 11.3           |
| Total   | 80                           | 100            |
| <b>Type of Ration card</b>                              |                              |                |
| <b>Type of Ration card</b>                              | <b>Number of Respondents</b> | <b>Percent</b> |
| BPL   | 34                           | 42.5           |
| APL   | 8                            | 10.0           |
| PLO   | 5                            | 6.3            |
| Antyodaya   | 2                            | 2.5            |
| Don't have  | 31                           | 38.8           |
| Total   | 80                           | 100            |
| <b>Basis Amenities and Facilities to the Respondent</b> |                              |                |
| <b>Having Toilet facilities</b>                         | <b>Number of Respondents</b> | <b>Percent</b> |
| Yes   | 8                            | 10.0           |
| No  | 72                           | 90.0           |
| Total   | 80                           | 100            |
| <b>Having Electricity</b>                               | <b>Number of Respondents</b> | <b>Percent</b> |
| Yes   | 38                           | 47.5           |
| No  | 42                           | 52.5           |
| Total   | 80                           | 100            |
| <b>Drinking water facilities</b>                        | <b>Number of Respondents</b> | <b>Percent</b> |
| Yes   | 74                           | 93.75          |
| No  | 6                            | 6.25           |
| Total   | 80                           | 100            |

Source: Primary source, 2016

The above table no: 2 depicts the socio-economic conditions of 80 respondents, and can clearly picturize the conditions of Dalit women, who are the part of the study. The high incidence of poverty can be traced out from the landholding data, where 60 percent of the respondents are landless. Whereas, 28.8 percent of the respondents having less than two acres of land. All the respondents were observed under poverty line. As high as 61 per cent of the families holding

ration cards, out of which BPL card holders are highest (42.5 percent ) and 2.5 percent belong to Antyodaya category and Whereas 31 percent of the families do not possess any ration card. It is not because they are not eligible, but it is due to the unsupportive and discriminatory behavior and negligence of the concerned authority. The basic amenities like sanitation and electricity facilities were very poor. The study reported that 90 percent of the households don't possess a toilet and 52.5 percent were having no electricity facilities. It is observed that lack of proper sanitation facilities like toilets, it would be difficult to a pregnant women to maintain and avail personal hygiene, consequently, it would invite a number of diseases. It results a negative impact on both mother and child. Generally, women are obliged by custom to fetch water, cooking and other household work. The unavailable water source has become a great challenge for rural women especially Dalit women. During the pre-natal and postnatal period, this type of social obligation negatively affect the health of both mother and child.

**TABLE NO: 3 RECEIVING ANTENATAL CARE OF DALIT WOMEN DURING PREGNANCY**

| <b>Age of Women During Pregnancy</b>               |                           |                |
|--|---------------------------|----------------|
| <b>Age group</b>                                   | <b>No of Respondents</b>  | <b>Percent</b> |
| 15-19  | 19                        | 23.8           |
| 20-24  | 28                        | 35.0           |
| 25-29  | 15                        | 18.8           |
| 30-35  | 11                        | 13.8           |
| Total  | 80                        | 100            |
| <b>Ante-Natal Care Received by Pregnant Women</b>  |                           |                |
| <b>Number of times</b>                             | <b>No. of Respondents</b> | <b>Percent</b> |
| One  | 6                         | 7.5            |
| Two  | 6                         | 7.5            |
| Three  | 23                        | 28.8           |
| Four   | 37                        | 46.3           |
| Don't know   | 8                         | 10.0           |
| Total  | 80                        | 100            |
| <b>The Medical Centre where Women Received ANC</b> |                           |                |
| <b>Medical Centre</b>                              | <b>No. of Respondents</b> | <b>percent</b> |
| Govt. Hospital                                     | 49                        | 61.3           |
| Private  | 12                        | 15.0           |
| Home   | 8                         | 10.0           |
| ICDS center  | 11                        | 13.8           |
| Total  | 80                        | 100            |

Source: Primary source, 2016

In the above table no: 3 , the first category data depicts the pregnancy age of respondents. It represents that, 23.8 percent of respondent were married before legal age which is 18 years in India. Due to this, there is a high possibility of pregnancy-related defects.

The second category of above tableno: 3 represents that, the ANC visit by the respondents. It is revealed that 90 percent of the women have visited at least once during pre- natal period. Out of the total respondents 46.3 percent of women have visited 4 times which is the highest in number. But 10 percent of the total respondents have reported that they didn't visit even once

during their pre-natal period. It depicts that the Dalit women still do not have the knowledge towards care and complications associated with their pregnancy. It was also observed that the education and occupation of the spouse impacts the health care of a pregnant woman for their ante-natal care visits.

The third category of the above table no:3 illustrated the accessibility of women for ANC care. The government hospital is reported as the center for ANC care of the highest number of respondents (61.3 percent) because provision of government programmes and only 10 percent of respondents received ANC services at Home. Why at home? Anganwadi worker and ASHA worker are providing ANC service to Dalit women at their home due to provision of NRHM programme.

**TABLE NO 4: DALIT WOMEN RECEIVED ANTE-NATAL CARE SERVICE DURING PREGNANT**

| <b>Weight checkup</b>                      | <b>No. of Respondents</b> | <b>Percent</b> |
|--|---------------------------|----------------|
| Yes  | 68                        | 85             |
| No   | 12                        | 15             |
| Total                                      | 80                        | 100            |
| <b>Blood pressure checkup</b>              | <b>No. of Respondents</b> | <b>Percent</b> |
| Yes  | 69                        | 86.3           |
| No   | 11                        | 13.8           |
| Total                                      | 80                        | 100            |
| <b>Urine sample checkup</b>                | <b>No. of Respondents</b> | <b>Percent</b> |
| Yes  | 69                        | 86.3           |
| No   | 11                        | 13.8           |
| Total                                      | 80                        | 100            |
| <b>Abdomen checkup</b>                     | <b>No. of respondents</b> | <b>Percent</b> |
| Yes  | 69                        | 86.3           |
| No   | 11                        | 13.8           |
| Total                                      | 80                        | 100            |
| <b>Knowledge of expected delivery date</b> | <b>No. of Respondents</b> | <b>Percent</b> |
| Yes  | 60                        | 75.0           |
| No   | 20                        | 25.0           |
| Total                                      | 80                        | 100            |
| <b>Advise to Deliver at Hospital</b>       | <b>No. of Respondents</b> | <b>Percent</b> |
| Yes  | 60                        | 75.0           |
| No   | 20                        | 25.0           |
| Total                                      | 80                        | 100            |

Source: Primary survey, 2016

Table no: 4 depicts that the routine ante-natal visits by respondents where it shows that around 86 percent of the respondents had routine checkup and they opined that due to governmental intervention through the schemes like NRHM and RCH II, maternal health care and ante-natal care has been improved. Whereas it was around 14 percent of them have not visited ANC for

health checkup. Weight checkup, blood pressure checkup, urine sample checkup, and Abdomen checkup are the part of antenatal care which they did not check up 15 percent, 13.8 percent, 13.8 percent and 13.8 percent respectively. In this context, one Dalit women argue that ASHA, ANM and Anganwadi workers do not work properly, despite being a part of NRHM, and there was limited communication among health workers and Dalit women.

It is very an undesirable result that 25 percent of the respondents were not aware about the delivery date and were not advised by any to where they go for delivery. In this context, Dalit women argued that ASHA, ANM and Anganwadi workers not visited them frequently and not maintaining proper communication with the Dalit women. This is an indication to the policymakers to revisit the existing plans and policies in order to broaden the health care objectives, especially towards Dalit communities. Regarding to advise to deliver at hospital, 25 percent of respondents were not received any advised from health care personnel.

**TABLE NO 5: INSTITUTIONAL DELIVERY OF DALIT WOMEN**

| The Place where Dalit Women Deliver their Baby |                    |         | Health Personnel Assisting Pregnant Women During Delivery |                    |
|--|--------------------|---------|---|--------------------|
| Medical Centre                                 | No. of Respondents | Percent | AHW*  | No. of Respondents |
| Home   | 24                 | 30      | Doctor  | 40                 |
| Govt. Hospital                                 |                    | 54      | 50.0  |                    |
| Private unsafe                                 | 2                  | 2.5     | ANM/Nurse/Midwife/LHV                                     | 14                 |
| Total  |                    | 80      | 17.5  |                    |
|  |                    | 100     | Dai/TBA   | 20                 |
|  |                    |         | 25.0  |                    |
|  |                    |         | Other Health Person                                       | 3                  |
|  |                    |         | 3.8   |                    |
|  |                    |         | No One  | 3                  |
|  |                    |         | 3.8   |                    |
|  |                    |         | Total   | 80                 |
|  |                    |         | 100   |                    |
|  |                    |         | (*Assisted Health Worker)                                 |                    |

Source: Primary survey, 2016

It was found by the above table no: 5 that 67.5 percent respondents had deliveries at Government institutions and 30 percent delivered their babies at home. Moreover, 2.5 percent of the respondents delivered their babies at the private unsafe institution. Although promotion of institutional delivery by implementing NRHM and RCH II scheme is carried out, still there is no 100% achievement of institutional delivery.

The Millennium Development Goals and NRHM scheme of Government of India has an ultimate purpose to achieve 100 percent attendance of a skilled birth assistant during delivery. The present study revealed that 67.5 percent of the respondents have got assistance from a professional health worker including doctors during delivery. Whereas still, 32.5% of respondents replied that deliveries are being performed at home by a traditional birth attendant who is known as Dai. The target of 100 percent institutional delivery is still not achieved due to illiteracy and other orthodox traditional beliefs. Supervision and care of skilled professionals during delivery are important as it aims to prevent maternal as well as child death. But it was



found that a majority of the respondents were not satisfied with the service/help offered by these attendants due to humiliation meted out to them because of the prevalence of caste-based discrimination in the state.

**TABLE NO: 6 POST NATAL CARE SERVICES TAKEN BY DALIT WOMEN**

| Number of PNC visit taken by the Dalit women |                    | Health Care received by Dalit women after Delivery |                    |         |
|--|--------------------|--|--------------------|---------|
| No. of times                                 | No. of Respondents | Time Period  | No. of Respondents | Percent |
| One time                                     | 6                  | After two days                                     | 3                  | 3.8     |
| 7.5  |                    | Within one week                                    | 19                 | 23.8    |
| Two time                                     | 10                 | After two weeks                                    | 23                 | 28.8    |
| 12.5   |                    | After one month                                    | 29                 | 36.3    |
| Three-time                                   | 46                 | Have not received                                  | 6                  | 7.5     |
| 57.5   |                    | Total  | 80                 | 100     |
| Have not received                            | 18                 |  |                    |         |
| 22.5   |                    |  |                    |         |
| Total  | 80                 |  |                    |         |
| 100  |                    |  |                    |         |

Source: Primary survey, 2016

Indian Public Health Standards (IPHS) emphasized a minimum of two PNC visits within a week after delivery, one within 48 hours. As per WHO recommendations, it is mandatory to provide post-natal care in the first 24 hours to all mothers and babies, regardless of where the birth occurs and a full clinical examination should be done around one hour after birth, when the baby has had his/her first breastfeed. However, in this table no 6, within one week, only 23.8 percent respondents received the above said. Furthermore, 36.3 percent respondents received PNC after one month. Thus, it was observed that 7.5 percent of the respondents did not receive any PNC in this study. Hence, it can be argued that Dalit women are still unaware of the need for PNC check-up. Abdominal pain and excessive bleeding seemed to be a serious problem for Dalit women that 22.5 percent and 23.8 percent respectively faced this problem, which requires special attention by health workers.

It is assumed that post-partum, women need more help and support and that home visits by health worker improve a mother's utilization of health care services. The early post-partum period might also be the best period to discuss the methods of family planning with the couple as to avoid the immediate pregnancy and also other health problems. The main factor for not receiving of PNC is that, the level of education and living standard of Dalit women had a significant effect on the probability of their receiving both prenatal and postnatal care. Due to low living stand, illiteracy and caste discrimination, they were not receiving PNC in the sample areas.

**TABLE NO: 7 EXPERIENCE WITH PRACTICE OF UNTOUCHABILITY BY ASHA, ANGANWADI AND ANM WORKERS**

| <b>Anganwadi Workers</b> | <b>No. of Respondents</b> | <b>Percent</b> |
|--------------------------|---------------------------|----------------|
| Yes                      | 56                        | 70.0           |
| No                       | 20                        | 25.0           |
| Don't know               | 4                         | 5.0            |
| <b>ASHA</b>              | <b>No. of Respondents</b> | <b>Percent</b> |
| Yes                      | 53                        | 66.3           |
| No                       | 22                        | 27.5           |
| Don't know               | 5                         | 6.5            |
| <b>ANM</b>               | <b>No. of Respondents</b> | <b>Percent</b> |
| Yes                      | 56                        | 70.0           |
| No                       | 20                        | 25.0           |
| Don't know               | 4                         | 5.0            |
| <b>Total:</b>            | <b>80</b>                 | <b>100</b>     |

*Source: Primary survey, April 2016*

The above table no: 7 clearly indicated the discriminatory behavior of health workers towards the Dalit women. Yes indicates that they have experience of untouchability and No indicates that not having experience of untouchability. As per the data, collected from 80 respondents, most of the respondent had the experience of untouchability in terms of taction by the health workers. As high as 70 percent of the respondents have felt that they are not being touched by Anganwadi workers and ANM workers when delivering the health care services. Whereas only 25 percent of them have notobserved direct discrimination related to taction. The remaining 5 percent were properly addressed the discriminatory attitude of health workers though they experienced the illtreatment . ASHA is another group of health workers whose behavior also shows the same trend. As high as 66.3 percent of the respondents have felt that they were not being touched by the ASHA workers during health service. Whereas only 27.5 percent of them have not experienced discrimination related to taction. The remaining 6.5 percent were unable to narrate the ill-behavior of health workers. Anganwadi workers also play a major role in providing health service to Dalit women. It was found in the study that Anganwadi workers were not willing to touch Dalit women due to their lower caste status in Hindu society. Some respondents also revealed the past experience, as they were forced to sit at distance with other caste women when they have attended Village Health Nutritional Day observed in their village.

Regarding the role of the ASHA workers, the Accredited Social Health Activist (ASHA) is the key facilitator under the National Rural Health Mission. ASHA was introduced as a link between the community and the health system, to motivate and help vulnerable sections to improve their access to basic health services. In the study, the majority of the ASHA were belonged upper caste society and for which Dalit women said that they have experienced caste-based discrimination from ASHA while getting services.. The respondents were further discriminated against by health workers in the form of home visit. The workers were hesitant to enter the house, living quarters, not using the furniture. These were the main forms of discrimination displayed by the health care providers as recollected by the respondents.

## **DISCUSSION**

Women's age during pregnancy has a direct impact on accessing maternal health care. Early pregnancy has adverse effects like immature birth, miscarriage, and the lack of nutritious food during pregnancy which results in anemia and blindness, a fact substantiated by the study.

In this study, it was observed that 42.5 per cent of respondents belonged to BPL category and 38.8 per cent of respondents reported that they do not have any cards which show their economic status. It is thus reflected that most of the Dalit families are economically very poor. Therefore, they could not afford extra expenditure in the name of maternal health. As a result they are totally depending on Government health care facilities. It is also found that they are facing multiple kinds of exclusion from the society mainly because of their caste background. For instance, they do not visit homes of the other category persons in the village, the ASHA, Anganwadi and ANM workers do not visit regularly or even if they visit, they pass information and advice regarding maternal health issues insufficiently because of the prevalence of untouchability.

### **UNABLE TO ACCESS ANTE-NATAL CARE SERVICE**

In the field work, the findings focused on ANC status of respondents including number of times of visit for ANC, receiving ANC, weight checkup, blood pressure checkup, urine test, abdomen checkup, advice to deliver in hospital, to know the expected delivery date, and receipt of folic acid and tetanus toxoid. These are the major health indicators during pregnancy. Regarding ANC visit, the study finds that 46.3 per cent of respondents visited four times and 28.3 per cent of respondents visited 3 times. It was also found that still 10 per cent of respondents have not undertaken any ANC visits. It was thus reflected that those who are less educated and were above 35 years old did not do any ANC visit.

### **TRADITIONAL PRACTICE OF DELIVERY AT HOME**

In this study, it was found that 67.5 per cent of institutional deliveries occurred among Dalit families due to Government efforts and interventions. With respect to home delivery, the study found that 30 per cent of the respondents delivered at home. The factors connected were lack of education, belonging to poor families, not availing timely vehicle facility, lack of availability for vehicle cost, and failure of Janani Express reaching on time among others. It was found that 25 per cent of respondents still depended on traditional birth attendance because they were not in contact with health workers like ASHA, ANM or attended the village Health Nutritional Day. They are also excluded from getting information regarding maternal health awareness.

### **POST-NATAL CARE INEQUALITY**

The per cent of women receiving PNC was much lower among those who delivered at home as compared to those having institutional deliveries. The study also shows that access to PNC services is dependent on obstetric factors like age of the mother and parity and social factors of Dalit families. The important findings of the study are that 22.5 per cent of the respondents did not receive any PNC because of illiteracy, low living standard, and poor access to transportation facility and caste based discrimination. One or two years of birth space of child are harmful to mother as well as child. The main reasons behind this ignorance are preference of male children, lack of knowledge of family planning, illiteracy and unmet need of family planning.

## **THE ROLE OF ANGANWADI, ASHA AND ANM WORKERS**

The role of Anganwadi workers are to weigh each child every month, record the weight graphically on the growth card, use referral card for referring cases of mothers/children to the sub-centres/PHC, and maintain child cards for children below 6 years and produce these cards before visiting medical and para-medical personnel. Under these circumstances, if the Anganwadi worker practiced caste discrimination, the situation of the Dalit women would become critical.

The role of ASHA workers is to take steps to create awareness and provide information to the community on determinants of health such as nutrition, basic sanitation and hygiene practices, healthy living condition for working conditions, information on existing health services and timely utilization of health and family welfare services. She will counsel women on birth preparedness, importance of safe delivery, breast feeding and complementary feeding, immunization, contraception and prevention of common infection including RTI/STI and care of young child. Thus, the situation of Dalit women becomes detrimental if the ASHA workers practice caste discrimination. Therefore, they should be given special training.

In this study, the role of ANM is very important and 66.3 per cent of respondents reported that they did not experience any touching by these workers. The defined role of ANM were holding weekly/ fortnightly meeting with ASHA to discuss the activities undertaken during the week/fortnight; acting as a resource person, along with Anganwadi Worker (AWW), for the training of ASHA and informing ASHA about the date and time of the outreach session and also guiding her to bring the prospective beneficiaries to the outreach session; participating and guiding in organizing Health Days at Anganwadi Centre; taking help of ASHA in updating eligible couples' register of the village concerning their chances for pregnancy. It was demanded by the Dalit women, during the survey that ANM should be recruited from their own community and not from urban areas.

## **CONCLUSION**

The field study brings out the important factors contributing to the maternal health care, that includes both antenatal care and postnatal care. In the study it was depicted that 10 percent of the Dalit women in the sample do not aware about the ANC visiting schedules to the hospitals and homes. Similarly, 10 percent of respondents aware about the information have received the ANC consultation at home as they were informed before by the ASHA, Anganwadi and ANM workers. It shows that the information about the ANC visit is not reaching to every woman who requires it. The main factors responsible for not getting the services are illiteracy, poor living standard, untouchability and patriarchal norm that control the women's body and mind by practicing that, deliveries should be performed at home. The result depicted in the sample that, 25 percent of the respondents were traditional assistant at home. The study draws the conclusion that due to untouchability, lower class structure, patriarchy, social beliefs and customs that alienated the health care provider to render comprehensive maternal health care services to the Dalit women. It is also evident from the study that 22.5 percent of Dalit women having below five-year-old child have not visited any health care centre for PNC. It is an indicator for the highest risk of child as well as maternal mortality in the study.

The healthcare providers like ASHA, Anganwadi worker, and ANM, do not care about Dalit women and their behaviour with Dalit pregnant women is more discriminatory in nature. They neither extend timely services to the women nor allow them to enter the health care service

centre whenever they require services during pregnancy and after delivery. Some of the respondents pointed out that, when they come for visit to the health centre, the health care providers refused their entry inside and make them to wait outside for longer period which restricts the minds of dalit women to visit healthcare centres. As majority of the health care providers practicing untouchability; hardly any pregnant Dalit women receives complete healthcare service. The study revealed that, the pregnant and lactating women from Dalit community are deprived of maternal health care services based on their caste identity. The result, goals of NRHM and RCH-II of providing holistic health care during pregnancy care facilities, the coverage is lower for the Dalit women in the state.

## REFERENCES

B, Simrun, 2013, 'Examining Social Inequalities and Health in India: Caste-based Discrimination and Maternal Health in Dalit ("Untouchable") Communities', National Association of Student of Anthropology, pp.1-2, Viewed 12April 2015, Academic search complete database <http://www.doi.org/10.1111/j.1556-3502.2013.541006./gobal anthropology-news.org>.

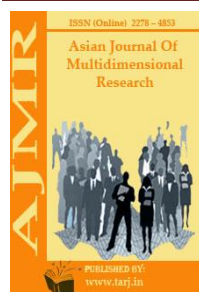
Linda Sanneving et al, 2013, 'Inequity in India: the case of maternal and reproductive health', Global Health action, 6:19145, pp-1-8, Viewed 22,may ,2015, Academic Search Complete database <http://www.doi.org/10.3402/gha.v6i0.1914> Global Health Action .org

Padhye, R.P., Sardeshpande, N.N and Shukla, A.P., 2013, 'study of Access to postnatal care (PNC) as determined by socio-demographic factors: A study in Maharashtra', Indian Journal of Maternal and Child Health , vol-15(3), pp.1-7 viewed 01 February,2014 , Academic Search Complete database from <http://www.ijmch.org> .

Shah G, Baviskar A, Mander H, Deshpande S, &Thorat S, 2006, Untouchability In Rural India,: Sage Publication, New Delhi/Landon

Singh,Abhishek ,et al ,2012, 'Socio-Economic Inequalities in the Use of Postnatal Care in India',journal of PLoS one,Volume7, Issue 5,e37037,pp.1-9, viewed 10 September 2014.Academic Search Complete database <http://www.plosone.org> on

Thorat,S&Sabrawal,S,N,2010, 'caste and social exclusion ,issue related concept, indicator and measurement (children social exclusion and development)',UNIFEF-IIDS,Working Paper Series, Volume 02 .No.01,pp.1-10, viewed 12 August,2014, Academic Search Complete database <http://www.dalitstudies.org.in/images/stories>.



## REGIONAL DISPARITY IN ODISHA AGRICULTURE: A DISTRICT WISE ANALYSIS

**Pragnya Laxmi Padhi\***

\*Lecturer in Economics,  
Bhima Bhoi College, Rairakhol,  
Research scholar,  
P.G. Department of Economics,  
Sambalpur University, Odisha, INDIA.  
Email id: n.pragnya@gmail.com

### ABSTRACT

*Agricultural variation in India is present extremely in terms of economic growth such as, per capita income, working population in agriculture, the proportion of population being poverty line etc. Some states are economically advanced and some are backward. Regional variation may be natural due to dependence on natural factors or it may be manmade due to high priority given to one sector and neglecting the other sectors in terms of investment and development. Regional variation may be inter-state or intrastate, inter-districts or intra districts, total or sectoral. The main reason of economic backwardness is high proportion of population on land, excess dependence on agriculture, low rate of literacy and technical knowledge, low productivity in agriculture etc. The entire five year plan stressed the importance of balanced regional development and policies were designed to direct move investment to the relatively backward areas. Nevertheless, regional disparity continues to remain a serious problem. In the first plan period agriculture was contributing 57% of the GDP. But the share has come down with the passage of planning and it contributes 13.7% of GDP in 2012-13. The rapid growth of secondary sector and the development of service Sector explained the declining share. This paper mainly focuses on inter district variation in agricultural development among the 30 districts of Odisha. This paper is divided into three Sections. The first section relates to introduction, review of literature, Objectives, Data base and Methodology. The second Section relates to measurement of disparities through various indicators selected for assessing the level of development of agricultural sector using Sudarshan Iyenger Method and Beta distribution. The third section relates to analysis of results classifying the districts into four categories such as very backward,*



*backward, developing and developed districts and providing some suggestions for the reduction of inter district variation.*

**KEYWORDS:** *Agricultural Variation, Economic Growth, Poverty, Investment, Development, Literacy, Productivity, GDP*

---

## **INTRODUCTION**

Agriculture is a vital sector of the economy of Odisha and a good deal has been achieved in this sector during the plan period. Farm production has increased manifold and yields of major crops such as paddy, pulses, oilseeds and vegetables have more than trebled in the last four and half decades. The state of Odisha presents a paradoxical picture of agricultural disparity and considerable spatio-temporal variations in growth and productivity.

## **SECTION I**

Agricultural sector is highly fluctuated due to dependent on most of the people in rural areas. The growth rate is also deteriorated due to bad crops year after year. The state of Odisha is prone to multiple hazards. Agriculture in Odisha is gambling with monsoon due to wide variation in rainfall within a year. Late arrival of monsoon creates water stress during crucial growth stages of plant causing reduction in yield. Odisha suffers from natural calamities like drought, flood and cyclone almost in each alternate year. Infrastructure inequalities of the past used to pose a serious constraint on agricultural progress and deterred peasantry from adopting improved techniques of production. The catalogues of technology, institutional and infrastructural improvements in the agricultural sector could not have been implemented in the absence of a strong support from the policy makers. It creates the severe financial crisis faced by the state government.

## **REVIEW OF LITERATURE**

Scholarly works on disparities in agricultural development concerning less developed countries like India are relatively scarce and more so in respect of small poor states like Odisha. **Ghosh et al. (1998)** have examined how agricultural growth has contributed to growing gap between rich and poor states in the post green revolution period during the period 1980-81 to 1996-97. Accordingly they have examined the trend in agricultural productivity, output growth and regional divergence in per rural person and found that states with better irrigation spread tend to converge to higher rate of growth whereas states with lower proportion of crop area under irrigation tend to converge to lower rate of growth. **Chang et al. (2001)** have examined agricultural investment and productivity in the context of developing countries and to identify the relative contribution of different inputs to output used in agricultural sector and to identify the concerned economic growth applied TFP and partial factor productivity functions and found that to promote agricultural productivity was through improving labour productivity, capital and land productivity because output growth was generated primarily from the expansion of inputs. **Chand et al. (2007)** have emphasized that the level of agricultural productivity over time was affected by area, inputs like irrigation and fertilizer, prices, technology and infrastructure.

**Behera et al. (2007)** has argued that the crisis in Indian agriculture is mainly due to the lack of appropriate policy rather than technology effects. Due to lack of easy proximity to the output market, weak agriculture-industry linkages, asymmetric information and absence of agri-business regulation have restricted farmers from getting the right price for their commodities

which has created disincentives for many of them to continue cultivation. **Mamta swain (2009)** has analyzed that disparity in agricultural productivity in Odisha across various regions and districts is a matter of great concern in spite of planned efforts, the gap between developed and backward regions has not been bridged due to differences in terms of soil fertility, land type, rainfall, irrigation and infrastructure and also socio-cultural and economic conditions of farmers. **Chand et al. 2011)** went a little deeper to probe the cause of regional variations are partly due to disparities in resource endowments, climate and topography and institutional and socio-economic factors. **Tripathy et al. (2011)** argue that instead of having adequate natural resources in the state there is uneven agricultural development in Odisha due to wastage of resources, increase in public cost, lack of credit facilities to farmers etc.

## **OBJECTIVES**

Precisely, the main objectives of the study are as follows.

1. To assess the relative position of Odisha compared to other states through analysis of inter-state development disparity in the country.
2. To examine the level of agricultural development disparity within the state across the districts

## **DATA BASE & METHODOLOGY**

For analysing the pattern of Sectoral disparity and development in Odisha, the data are secondary in nature and have been collected particularly from Odisha Statistical Abstract of Odisha, Odisha Agriculture statistics and Economic Survey of different years. The following indicators have been applied for the assessment of the Sectoral variation and development in Odisha.

1. Cropping Intensity
2. Net Area Irrigated as % of Net Area Sown
3. Productivity of Rice per hectare
4. Productivity of Food grains per hectare
5. Fertiliser consumption
6. Percentage of Non Agricultural workers to total workers
7. Per Capita Agricultural Credit
8. Wage rate of Agricultural labour
9. Non food grain on food grain area

## **METHODOLOGY**

The proposed methodology consists of Sudarshan Iyenger method along with Beta distribution for objective classification of thirty districts of Odisha into four groups such as Very backward, Backward, Developing and Developed.

### **Sudarshan Iyenger Method:**

This method enables us calculating the indicator of the overall level of development of different districts by giving relative weights to the individual indicators reflecting to their relative importance and adopting the inverse ratio of standard deviation.

Let  $X_{ib}$  represent the size of the value of the  $i$ 'th development indicator in  $b$ 'th district of the state ( $i = 1, 2, 3, \dots, m$  and  $b = 1, 2, 3, \dots, n$  say)

$$Y_{ib} = \frac{X_{ib} - \text{Min}X_{ib}}{\text{Max}X_{ib} - \text{Min}X_{ib}} \quad \text{----- (1)}$$

Where  $\text{Min } X_{ib}$  and  $\text{Max } X_{ib}$  are respectively the minimum and maximum of  $(X_{i1}, X_{i2}, \dots, X_{in})$  &  $Y_{ib}$  is the Standard variable.

If however the indicator  $X_{ib}$  is negatively associated with development for example, the infant mortality rate or the unemployment ratio which should decline as the district develops, then (1) can be written as

$$Y_{ib} = \frac{\text{Max}X_{ib} - X_{ib}}{\text{Max}X_{ib} - \text{Min}X_{ib}} \quad \text{----- (2)}$$

Obviously the scaled values  $Y_{ib}$  vary from 0 to 1. From the matrix of scaled values  $Y = [Y_{ib}]$ , a measure for the level or stage of development for different districts is constructed as follows:

$$Y_b = W_1 Y_{1b} + W_2 Y_{2b} + \dots + W_m Y_{mb} \quad \text{----- (3)}$$

Where  $Y_b$  is the overall district index and it is assumed that the weights vary inversely as the variation in the respective indicators of development or more specifically.

$$W_1 = \frac{K}{SD(Y_i)} \quad \text{----- (4)}$$

Where, 
$$K = \left\{ \sum_{i=1}^M \left[ \frac{1}{SD(Y_i)} \right] \right\}^{-1}$$

The Overall index  $Y_b$  also varies from 0 to 1.

**β-Distribution:**

For classificatory purposes, a simple ranking of the district indices  $Y_b$  would do. However, a more meaningful characterization of the different stages of development would be in terms of a suitable fractile classification from an assumed distribution of  $Y_b$ . It appears appropriate to assume that  $Y_b$  has a Beta distribution in the range (0, 1). The Beta distribution is generally skewed and perhaps, relevant to characterize positive valued random variables.

A random variable  $Z$  has a Beta distribution in the interval (0, 1), if its probability density function  $f(z)$  can be written as:

$$F(z) = \frac{1}{\beta(c,d)} z^{(c-1)} (1-z)^{(d-1)} , 0 < z < 1 \text{ and } c, d > 0$$

$$\text{Where } \beta(c, d) = \int_0^1 z^{c-1} (1-z)^{d-1} dz$$

Let  $(0, Z_1)$ ,  $(Z_1, Z_2)$ ,  $(Z_2, Z_3)$  &  $(Z_3, 1)$  be linear intervals such that each interval has the same probability weight of 25%. These four fractile groups can be used to characterize the various stages of development as follows:

- Very Backward if  $0 < Y_b \leq Z_1$
- Backward If  $Z_1 < Y_b \leq Z_2$
- Developing If  $Z_2 < Y_b \leq Z_3$
- Developed If  $Z_3 < Y_b < 1$

Since indices take values between 0 and 1, the parameters c, and d in the assumed beta distribution is estimated as follows:

$$c = \mu^1_1 (\mu^1_1 - \mu^1_2) / \{ \mu^1_2 - (\mu^1_1)^2 \}$$

$$d = (1 - \mu^1_1) (\mu^1_1 - \mu^1_2) / \{ \mu^1_2 - (\mu^1_1)^2 \}$$

Where  $\mu^1_1$  and  $\mu^1_2$  are the first and second moments about zero.

Composite index using Sudershan Iyenger Methodology and Beta variate values computed for different sectors and the overall position are presented below. The districts can be categorized into four categories (i) Developed (ii) Developing (iii) Backward (iv) Very Backward according to the values of Beta variate.

| Category | Level of Development | Value of Beta Distribution |
|----------|----------------------|----------------------------|
| A        | Very Backward        | 0 to 0.25                  |
| B        | Backward             | 0.25 to 0.50               |
| C        | Developing           | 0.50 to 0.75               |
| D        | Developed            | 0.75 to 1                  |

## SECTION II

The **Agricultural Development** for Major States can be measured by taking the indicators of % of Net Area irrigated, Cropping intensity, % of Food grain production, % of Agricultural workers to total workers, Net area sown, % of rice cultivated area, % share in total food grain area, % share in total food grain production, yield rate of rice and yield rate of food grains that shows a moderate level of infrastructure development in the state are explained in Table-1.

**TABLE – 1: INDICATORS OF AGRICULTURAL DEVELOPMENT FOR MAJOR STATES**

| State          | % of Net Area Irrigated (NAI) | Cropping Intensity (CI) | % of Food grain (FG) | % Agricultural Workers to total worker (AW/TW) | Net Area Sown (NAS) | % of Rice Cultivated Area | % share in total food grain Area | % share in total food grain production | Yield rate of Rice (Qtl./hect.) | Yield rate of Food grains (Qtl/Hect) |
|----------------|-------------------------------|-------------------------|----------------------|--|---------------------|---------------------------|----------------------------------|--|---------------------------------|--------------------------------------|
| Andhra Pradesh | 42.18                         | 125.71                  | 63.93                | 29.18  | 7.90                | 32.74                     | 55.33                            | 8.31                                   | 30.35                           | 25.30                                |
| Bihar          | 63.65                         | 140.49                  | 83.25                | 45.86  | 3.71                | 39.38                     | 86.68                            | 3.77                                   | 10.95                           | 14.79                                |

|                |              |               |              |              |             |              |              |             |              |              |
|----------------|--------------|---------------|--------------|--------------|-------------|--------------|--------------|-------------|--------------|--------------|
| Jharkhand      | 8.16         | 111.92        | 106.72       | 27.17        | 0.77        | 42.62        | 88.38        | 0.77        | 15.41        | 12.57        |
| Gujarat        | 42.09        | 108.11        | 40.63        | 26.98        | 7.28        | 6.60         | 36.95        | 3.41        | 18.52        | 18.43        |
| Haryana        | 86.45        | 178.90        | 74.26        | 25.18        | 2.48        | 19.14        | 72.50        | 6.80        | 27.89        | 35.26        |
| Karnataka      | 32.58        | 123.73        | 64.00        | 28.17        | 7.43        | 11.79        | 63.08        | 5.68        | 27.19        | 16.84        |
| Kerala         | 18.57        | 128.38        | 8.24         | 11.96        | 1.46        | 8.05         | 8.31         | 0.22        | 24.52        | 24.00        |
| Madhya Pradesh | 46.03        | 143.01        | 60.08        | 34.05        | 10.68       | 7.27         | 58.35        | 6.12        | 11.06        | 11.62        |
| Chhattisgarh   | 28.25        | 118.75        | 89.10        | 31.75        | 3.32        | 65.30        | 87.38        | 2.89        | 16.63        | 14.24        |
| Maharashtra    | 18.70        | 129.95        | 57.62        | 24.59        | 12.29       | 6.31         | 54.13        | 6.31        | 17.76        | 11.84        |
| <b>Odisha</b>  | <b>39.11</b> | <b>163.38</b> | <b>58.41</b> | <b>32.05</b> | <b>3.31</b> | <b>77.84</b> | <b>97.97</b> | <b>3.12</b> | <b>16.16</b> | <b>14.32</b> |
| Punjab         | 97.96        | 189.39        | 82.67        | 28.55        | 2.94        | 35.91        | 82.58        | 11.40       | 38.28        | 42.80        |
| Rajasthan      | 34.46        | 128.11        | 69.33        | 28.89        | 12.96       | 0.50         | 57.98        | 7.70        | 20.25        | 12.50        |
| Tamil Nadu     | 58.54        | 113.90        | 56.96        | 22.89        | 3.50        | 33.13        | 55.17        | 3.11        | 30.40        | 23.93        |
| Uttar Pradesh  | 81.12        | 149.28        | 79.97        | 39.17        | 11.72       | 24.79        | 84.27        | 0.74        | 19.01        | 18.41        |
| UttaraKhand    | 45.61        | 157.35        | 84.56        | 20.86        | 0.51        | 22.29        | 78.02        | 19.32       | 21.20        | 23.86        |
| West Bengal    | 59.21        | 181.32        | 58.35        | 26.89        | 3.53        | 51.70        | 58.15        | 5.92        | 26.39        | 26.01        |
| All India      | 44.54        | 110.90        | 100          | 29.68        | 100.00      | 21.54        | 63.71        | 100.00      | 22.02        | 20.05        |

**Source:** Statistical year Book, India, 2015

In spite of relatively higher dependence on agricultural sector is quite underdeveloped in the state of Odisha compare to all India level. The level of irrigation in the state of Odisha is low with around 39.11% as compared to 44.54% in the all India basis. The Cropping Intensity pattern (CI) of the state of Odisha is 163.38% compare to 110.90% which shows a better position of the state in all India level. The production of Food grains in the state of Odisha stood at a rate of 58.41% compare to 100% in all India basic. The % Agricultural Workers to total worker (AW/TW) rate of Odisha is 32.05% compare to 29.68% in all India level. The % of Net Area Sown in the state of Odisha is low with around 3.1 % compared to 100% at the all India level. The % of Rice Cultivated Area in the state of Odisha is 77.84% compare to 21.54% in all India level that shows that the agricultural sector in the state is dominated by rice production. The % Share in total food grain Area in the state of Odisha is 97.97% which is highest compare to 63.71% in all India level. The % Share in total food grain production in the state of Odisha is only 3.12% compare to 100% in all India level. The Yield rate of Rice (Qtl./hect.) in the State of Odisha stood at the rate of 16.16% comparing 22.02% in the all India level. Finally, the Yield rate of Food grains (Qtl/Hect.) in the state of Odisha is 14.32% compare to 20.05% in the all India level.

#### **Estimation of Agricultural development in Odisha:**

It is observed that during 1993-94 to 2011-12. % of net area irrigated as percentage of net Area sown has increased from 19.28% to 21.25% in Odisha. Cropping intensity is increased from 118.99 to 167.00; Productivity has increased from 1140 k.g per hectore to 1737 kg per hectare, and Consumption of fertilizer per thousand hectors of gross cropped area 22 to 58.74 thousand per hectare. Cultivable area per agricultural workers is declined from 0.94 hectore to 0.82 hectore.

Cultivable land as % of Total geographical area is also declined from 46.12% to 35.70% and mean wage rate of male agricultural labour has increased from Rs 24.53 in 1994-95 to Rs 87 in 2011-12.

**TABLE-2: INDICATORS OF AGRICULTURAL DEVELOPMENT IN ODISHA:**

| Indicators  | 1993-94 | 2011-12 |
|---|---------|---------|
| Net area irrigated as % of Net area sown          | 19.29   | 21.15   |
| Cropping Intensity                                | 118.99  | 167.00  |
| Productivity per hector (Foodgrain) (Kg/hect.)    | 1140    | 1737    |
| Consumption of fertiliser (kg. / Ha.)             | 22      | 58.74   |
| Cultivable area per agricultural workers (in ha), | 0.94    | 0.82    |
| Cultivable land as % of Total geographical area   | 46.12   | 35.70   |
| Men wage rate of male agricultural worker         | 24.53   | 87      |

**Source:** Odisha economic survey, Odisha statistical abstract

### **Agricultural Variation in Odisha:**

High proportion of population staying in rural areas and high proportion of workers depend on agriculture reflects that agriculture is the dominant economic activity of the state. The indices of Agricultural Development considered in the present analysis are Cropping intensity, Net area irrigated as % of net area sown, Productivity of Rice per hectare, Fertiliser consumption, Non agricultural workers to total workers, Per capita agricultural credit, Wage rate of Agricultural labour and % of non Noon food grain area are analysed in Table 3.

The % of cropping intensity of Odisha in 2012-13 is stood at the rate of 167. The cropping intensity is highest and lowest are Bhadrak (198) and Nayagarh (135) respectively. The level of irrigation in the state is low with around 21.15% of the Net Area Sown. The districts having highest area covering net area irrigated is Cuttack (54.04%) and the lowest is in the district of Kandhamal (9.13). The performance of agricultural sector is dominated by rice and food grains. The share of rice and food grains in gross cropped area stood at 23.61% and 17.37% respectively. The district with highest percentage of rice production is Sonapur (42.2) and the lowest percentage district is Kandhamal (16.16). The district highest in the production of food grains is Sonapur (32.55) and the lowest in Ganjam (11.82).

The % of total fertilizer consumption of Odisha in 2012-13 is stood at the rate of 1178.73%. The level of fertilizer consumption in the state is highest in the district of Nawarangpur (170.96) and the lowest in kandhamal (8.24). In 2011 percentage of non agricultural workers to total workers is stood at the rate of 38.2%. It is observed that the district found highest in the percentage of non agricultural workers to total workers is Khurda (73.6) and the lowest in Malkangiri (17.1). The per capita agriculture credit in Odisha varies significantly in the districts wise which stood at the rate of Rs.2015 during 2012-13 that represents the districts having highest percapita earning is Baragarh (Rs.4893) and the lowest in Malkangiri (Rs.594). The wage rate of agricultural labour is found at the rate of 87 during 2010-11. The high proportion is shown by the district of Puri (106) and the lowest in the district of Nuapara (62). Finally the non food grain on food grain area during 2012-13 is 27.70% that shows significant variation across the districts. The districts having highest non food grain on food grain area is kandhamal (51.52) and the lowest district is Sonapur (12.85).



**TABLE – 3: INDICATORS OF AGRICULTURAL DEVELOPMENT IN ODISHA**

| Sl. No. | Name of the District | Cropping Intensity (%), 2012-13 | Net Area Irrigated (NAI) as % of Net Area Sown, 2012-13 | Productivity of Rice per hectare, 2012-13 | Productivity of Food grains per hectare, 2012-13 | Fertiliser consumption (Kgs./ha), 2012-13 | %NAW( Non Agricultural workers) to total workers, 2011 | Per Capita Agricultural Credit, 2012-13 | Wage rate of Agricultural labour, 2010-11 | % NFG( Non food grain) area, 2012-13 |
|---------|----------------------|---------------------------------|---|---|--|---|--|---|---|--------------------------------------|
| 1       | Angul                | 168                             | 13.89   | 20.8                                      | 12.16  | 23.15                                     | 46.9   | 2250                                    | 89  | 41.37                                |
| 2       | Balasore             | 168                             | 41.09   | 17.65                                     | 16.6   | 96.03                                     | 30.6   | 2796                                    | 97  | 32.55                                |
| 3       | Barangah             | 137                             | 31.12   | 31.95                                     | 26   | 123.83                                    | 24.3   | 4893                                    | 81  | 14.84                                |
| 4       | Bhadrak              | 135                             | 17.36   | 21.2                                      | 20.16  | 95.49                                     | 19   | 2510                                    | 101                                       | 21.90                                |
| 5       | Bolangir             | 167                             | 11.53   | 31.95                                     | 20.14  | 43.58                                     | 44.6   | 1196                                    | 79  | 25.63                                |
| 6       | Boudh                | 164                             | 14.73   | 25.64                                     | 18.37  | 42.05                                     | 25.7   | 2983                                    | 74  | 19.79                                |
| 7       | Cuttack              | 193                             | 54.04   | 29.28                                     | 17.96  | 63.71                                     | 58.7   | 2785                                    | 94  | 23.67                                |
| 8       | Deogarh              | 177                             | 20.45   | 26.44                                     | 18.24  | 45.74                                     | 24.3   | 2090                                    | 78  | 30.98                                |
| 9       | Dhenkanal            | 195                             | 19.17   | 27.12                                     | 16.81  | 26.61                                     | 46   | 2288                                    | 87  | 40.18                                |
| 10      | Ganjam               | 181                             | 12.53   | 17.87                                     | 11.82  | 67.18                                     | 43.3   | 2300                                    | 84  | 22.78                                |
| 11      | Gajapati             | 197                             | 12.81   | 20.51                                     | 13.1   | 42.5                                      | 25.8   | 1682                                    | 89  | 31.62                                |
| 12      | Jajpur               | 195                             | 42.79   | 17.61                                     | 13.28  | 51.19                                     | 44.4   | 1570                                    | 95  | 31.79                                |
| 13      | Jagatshingpur        | 195                             | 37.96   | 29.18                                     | 18.47  | 40.61                                     | 45.1   | 3330                                    | 96  | 28.80                                |
| 14      | Jharsuguda           | 145                             | 13.66   | 26.76                                     | 18.94  | 75.74                                     | 60.6   | 1796                                    | 73  | 37.08                                |
| 15      | Kalahandi            | 183                             | 17.33   | 25.45                                     | 18.03  | 62.92                                     | 22.6   | 1463                                    | 96  | 26.24                                |
| 16      | Kendrapara           | 191                             | 35.26   | 18.68                                     | 13.68  | 25.44                                     | 37.2   | 2351                                    | 100                                       | 18.12                                |
| 17      | Keonjhar             | 161                             | 12.20   | 16.64                                     | 13.7   | 29.27                                     | 33.7   | 1352                                    | 84  | 35.45                                |
| 18      | Koraput              | 150                             | 20.64   | 20.1                                      | 14.99  | 43.02                                     | 28.2   | 1211                                    | 83  | 28.93                                |
| 19      | Kandhamal            | 188                             | 9.13  | 16.16                                     | 12.6   | 8.24                                      | 31.8   | 1843                                    | 76  | 51.52                                |
| 20      | Khurda               | 192                             | 24.02   | 22.92                                     | 16.52  | 61.32                                     | 73.6   | 1792                                    | 101                                       | 37.47                                |

|        |             |     |       |       |       |        |      |      |     |       |
|--------|-------------|-----|-------|-------|-------|--------|------|------|-----|-------|
| 21     | Mayurbhanj  | 137 | 13.92 | 17.26 | 15.31 | 36.37  | 34   | 1076 | 84  | 27.53 |
| 22     | Malkangiri  | 171 | 16.21 | 18.76 | 17.06 | 26.25  | 17.1 | 594  | 75  | 41.43 |
| 23     | Nayagarh    | 198 | 18.84 | 21.95 | 13.76 | 26.42  | 40.8 | 2764 | 97  | 21.06 |
| 24     | Nuapara     | 146 | 9.71  | 21    | 12.94 | 36.84  | 19.9 | 1163 | 62  | 21.88 |
| 25     | Nawarangpur | 160 | 12.27 | 22.76 | 22.49 | 170.96 | 17.9 | 1177 | 86  | 17.13 |
| 26     | Puri        | 187 | 53.03 | 24.59 | 17.94 | 67.76  | 45.8 | 1537 | 106 | 25.97 |
| 27     | Rayagada    | 176 | 12.72 | 21.19 | 15.34 | 46.2   | 25.6 | 1308 | 101 | 40.87 |
| 28     | Sambalpur   | 154 | 27.05 | 30.03 | 23.11 | 135.28 | 51   | 2739 | 87  | 24.53 |
| 29     | Sonepur     | 181 | 37.49 | 42.2  | 32.55 | 51.23  | 25.6 | 1908 | 68  | 12.85 |
| 30     | Sundargarh  | 137 | 12.46 | 23.21 | 18.65 | 36.97  | 49.9 | 1176 | 81  | 24.20 |
| ODISHA |             | 167 | 21.15 | 21.15 | 17.37 | 58.74  | 38.2 | 2015 | 87  | 27.70 |

**Source:** Statistical Abstracts of Odisha & Odisha agricultural Statistics

### Measurement of Infrastructural disparity in the state of Odisha

The position of districts in different sectors & in overall by ranking the districts have been analysed in Table-4. By looking forward from the table, we can observe the following ranking patterns of districts. In the following an attempt has been made to present the variations in development among districts in different sectors separately.

**TABLE-4: BETA VALUES OF DISTRICTS OF ODISHA**

| Districts     | Agriculture | Districts   | Agriculture |
|---------------|-------------|-------------|-------------|
| Angul         | 0.440926    | Kendrapara  | 0.507893    |
| Balasore      | 0.779692    | Keonjhar    | 0.128697    |
| Baragarh      | 0.8765      | Koraput     | 0.134056    |
| Bhadrak       | 0.430254    | Kondhamal   | 0.244287    |
| Bolangir      | 0.448999    | Khurda      | 0.914569    |
| Boudh         | 0.28004     | Mayurbhanj  | 0.05652     |
| Cuttack       | 0.962695    | Malkangiri  | 0.106235    |
| Deogarh       | 0.441053    | Nayagarh    | 0.550073    |
| Dhenkanal     | 0.762885    | Nuapara     | 0.002592    |
| Ganjam        | 0.298482    | Nawarangpur | 0.441578    |
| Gajapati      | 0.329981    | Puri        | 0.905251    |
| Jajpur        | 0.683111    | Rayagada    | 0.46057     |
| Jagatshingpur | 0.930965    | Sambalpur   | 0.911236    |
| Jharsuguda    | 0.581572    | Sonepur     | 0.824494    |
| Kalahandi     | 0.500018    | Sundargarh  | 0.178427    |

## SECTION III

## SUMMARY &amp; CONCLUSION

In terms of Agricultural Development districts which are coming under the category of very backward category are Keonjhar, Koraput, Kondhamal, Mayurbhanj, Malkangiri, Nuapara and Sundargarh. The districts which come under backward categories are Angul, Bhadrak, Bolangir, Boudh, Deogarh, Ganjam, Gajapati, Nawarangpur and Rayagada. The districts which categorised as developing districts are Jajpur, Jharsuguda, Kalahandi, Kendrapara and Nayagarh. The developed districts are Balasore, Baragarh, Cuttack, Dhenkanal, Jagatshingpur, Khurda, Sonapur, Sambalpur and Puri.

TABLE-5: STATUS OF DIFFERENT DISTRICTS OF ODISHA

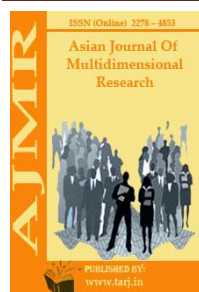
| Sector      | Very Backward   | Backward  | Developing  | Developed   |
|-------------|---|---|---|---|
| Agriculture | Keonjhar<br>Koraput<br>Kondhamal<br>Mayurbhanj<br>Malkangiri<br>Nuapara<br>Sundargarh | Angul<br>Bhadrak<br>Bolangir<br>Boudh<br>Deogarh<br>Ganjam<br>Gajapati<br>Nawarangpur<br>Rayagada | Jajpur<br>Jharsuguda<br>Kalahandi<br>Kendrapara<br>Nayagarh | Balasore<br>Baragarh<br>Cuttack<br>Dhenkanal<br>Jagatshingpur<br>Khurda<br>Sonapur<br>Sambalpur<br>Puri |

We can conclude from the indicators of economic development that there is continuous regional disparity in agricultural sector in Odisha. The unevenness in development profile for Odisha may be explained through historical factors as well the nature of development process which has accentuated the unevenness further. In such a context the development profile of Odisha with continuing underdevelopment of the tribal Odisha with low level of development necessitates a new direction for the public investment to flow into these regions till there is adequate development of economic and social infrastructure and self sustaining inclusive growth process.

The inequalities can be reduced by taking systematic steps and policy formulation by the government. (i) There is an urgent need of strengthening indigenous innovation to establish farming systems towards sustainable agriculture. Agricultural extension and training need to be oriented to educate the farmers and expedite the process. (ii) Non availability of easy finance is a pragmatic problem in Odisha agriculture. The RBI, NABARD and Micro finance need to develop an appropriate mechanism of greater financial inclusion to ensure the flow of credit and subsidy to the marginal and small farmers. (iii) Irrigation coverage in Odisha is very less so it is very difficult for modern agriculture. Pani Panchayat system should be encouraged and give importance more in this regard. There is need of effective government intervention to streamline the working of the irrigation system, and increase public-private investment in agricultural infrastructure including irrigation. (iv) Participating model of development must be encouraged by wider sections of the society to reform the economy. Efficiency level of them will be increased to compete with the forward regions of the state.

## REFERENCES

1. Brussels, July (2008), "A review of causes of high prices and outlook for world agricultural markets" European Commission.
2. Chand Ramesh, Raju S S, Garg Sanjeev, Pandey Lal Mani (2011), "Instability and regional variation in Indian agriculture" NCAP Policy Paper No.26.
3. Chang, H. and Zepeda, L. (2001), "Agricultural Productivity for Sustainable Food Security in Asia and the Pacific: the Role of Investment", FAO Corporate Document Repository, originated by: Economic and Social Development Department, 2001.
4. Maan Kaur Veerpaul, Kumar Sandeep (2012), "State wise agricultural sector: Growth and performance" International Journal of Application or Innovation in Engineering & Management, Volume 1, Issue 2.
5. Mishra Pulak, Behera Bhagirath (2007), "Acceleration of Agricultural Growth in India: Suggestive Policy Framework", Economic and Political Weekly, Vol. 42, No. 42, pp. 4268-4271.
6. Pandey Lalmani, Garg Sanjeev, Chand Ramesh (2011), "Growth crisis in agriculture: Severity and options at national and state levels", Economic and Political Weekly, June 30, 2528-2533.
7. Swain Mamta (2009), "Regional disparity in agricultural development in Odisha in the pre & post reform period", 195-215, social change, Vol. 39, No 2.
8. Tripathy P.K. and Mishra J.K. (2011), "Disparity in development of Odisha State", Sambalpur University.
9. Tripathy, U., Das, M., & Padhi, P.L. (2011), "Regional Variation in Development Profile of Orissa: An Econometric Analysis of Indicators of Development", International Journal of Multi-Disciplinary Research, 1(6), 107-130.
10. Tripathy, U. (2010), Impact of Regional variation in agricultural development: A district-wise Analysis in Orissa", IJAGE, Vol. VII, Nos 1 & 2, 48-61.
11. Odisha Agricultural Statistics 2012-13.
12. Statistical Abstract of Odisha 2015.
13. The Odisha Human Development Report (OHDR)-2011



## A COMPARATIVE STUDY OF CUSTOMERS' PERCEPTIONS TOWARDS MANAGERIAL PRACTICES OF PDS IN CHHATTISGARH AND MIZORAM

Lalropui\* ; NVR Jyoti Kumar\*\*

\*Assistant Professor,  
Department of Management,  
Mizoram University, Aizawl,  
Mizoram, INDIA.  
Email id:asenirvt@gmail.com

\*\*Dean,  
School of Economics,  
Management and Information Science,  
Department of Commerce,  
Mizoram University, Aizawl,  
Mizoram, INDIA,  
Email id: nvrjyoti@rediffmail.com

### ABSTRACT

*The central and state governments in India share the responsibility of regulating the Public Distribution System (PDS). The central government is responsible for procurement, storage, transportation and bulk allocation of food grains; state governments hold the responsibility for distributing the same to the consumers through the established network of fair Price Shops (FPSs). State governments are also responsible for operational responsibilities including allocation and identification of families Below Poverty Line (BPL), issue of ration cards, and supervision and monitoring the functioning of FPSs. This paper studies the customer perceptions in respect of certain managerial practices of PDS in two select states of Chhattisgarh and Mizoram. For this purpose, 300 respondents were surveyed from both the states. About 40% of the respondents in Mizoram and nearly 45% of the respondents in Chhattisgarh believed that their govt. had been issuing excess ration cards. Nearly 55% of the respondents in Mizoram and nearly 65% of the respondents in Chhattisgarh have felt that there is no proper monitoring (inspection) of their own FPS. Both the state governments need to relook into the criteria set for*

*identifying the entitled beneficiaries under PDS and focus more on the regular inspection of FPSs to make PDS more dependable for the vulnerable sections of the society.*

**KEYWORDS:** *Below Poverty Line, Customer Perceptions, Fair Price Shop, Public Distribution System*

---

## **I. INTRODUCTION**

The Public Distribution System (PDS) has become a popular food security system in the country which is managed jointly by the central government and state governments in India. It has been distributing subsidized food and non-food items (e.g. kerosene oil) to the targeted beneficiaries including the poor. Major commodities distributed include staple food grains such as wheat, rice, sugar and kerosene through a network of public distribution shops or Fair Price Shops (FPSs) also known as Ration Shops established in different states across the country. The Food Corporation of India (FCI), a public sector agency, procures and maintains the PDS and PDS is claimed and considered to be the most important food security network.

Despite its growing success in states such as Chhattisgarh, Tamil Nadu, Himachal Pradesh, Orissa, Kerala, and Andhra Pradesh for years the governments both at the centre and the states have been grappling with the issue of efficient running of more than 5.35 lakh ration shops as on March 31, 2017<sup>1</sup> which deliver food grains under Targetted Public Distribution System.

The PDS was designed to meet twin objectives: Provide remunerative prices to farmers, and subsidize food to those who need it. Therefore, people falling below the Below Poverty Line (BPL) must be the priority. There are about 5.35 lakh FPSs across India as on 16<sup>th</sup> July 2017. The number of beneficiaries under PDS worked out to be 81,34,91,345 as on 3<sup>rd</sup> February 2017. Both the central and state governments share the responsibility of regulating the PDS. While the central government is responsible for procurement, storage, transportation and bulk allocation of food grains, state governments hold the responsibility for distributing the same to the consumers through the established network of FPSs.

In respect of effective implementation of PDS, differences do exist among the states across the country. However, the govt. of Chhattisgarh has been performing well in this regard. This state was formed on November 16, 2000 when the 16 Chhattisgarhi speaking southeastern districts of Madhya Pradesh gained statehood and Raipur as its capital.

Armed with the slogan ‘bread and employment for all’ nearly 35 lakh Below the Poverty Line (BPL) people have been supplied with subsidized Rs. 2 per kg rice. So strong and efficient is the PDS in Chhattisgarh that it has become the lifeline for its over 63 lakh<sup>2</sup> recipients or roughly 65% of the state’s population.

Mizoram, a small state of North East Region (NER), has experienced certain irregularities in management of public distribution system such as leakages in PDS and issue of bogus ration cards. The Directorate of Food, Civil Supplies & Consumer Affairs (FCS & CA) is to look after PDS in the state of Mizoram on the principle of ‘No profit No loss’ so that the maximum benefit can be given to the general public by recovering from them only cost price of the food stuff and incidental charges incurred for the purpose. The main responsibility of FCS & CA department is, therefore, implementation of PDS now known as Targetted Public Distribution System (TPDS) in Mizoram. The scheme is being implemented through the District Civil Supplies Officers (DCSOs) in each of eight districts and sub-divisional food and civil supplies officers (SDF&



CSOs) in the sub-divisions. There were nine district officers and one sub-divisional office in the state in 2017.

## II. REVIEW OF LITERATURE

A few important studies in respect of functioning of PDS in different states of India have been reviewed hereunder:

Ananda (2008) in his thesis entitled, "State response to food security: A study of the Public Distribution System in Anantapur district of Andhra Pradesh" observed that cardholders face problems of irregular and inadequate supplies and lack of information about when the ration would be available. The commodities used to arrive late and irregularly. The villagers were poorly informed, and certainly not in advance. The ration supplies were normally available only for a few days in a month.

Alamu R. (2011) found that PDS is working quite successfully in Tamil Nadu. People in the state are aware of their entitlements. At least one person in every household is aware of the details of PDS ration shops and prices. The dissemination of information was impressive. Awareness amongst the masses reduces corruption. Moreover, it is not just awareness amongst people but also politics that makes the PDS perform.

Parsai (2012) observed that a concerted move by the centre to encourage the states to digitise the ration cards has enabled it to weed out 2.96 crore bogus ration cards from the Public Distribution System. Of an estimated 10.56 crore ration cards, the number of cards has come down to 7.6 crores. The study found that an estimated 40 percent of PDS grains were diverted but this has come down to 20 percent in recent years.

Chhaterjee (2014) observed that PDS in Koratpur district of Odisha functions well in many areas; rice is supplied regularly. However, there is room for improvement specifically in ensuring regularity of the distribution of sugar, providing the entitled quantity of kerosene in full and increasing awareness on entitlements among PDS users.

Kavita (2014) studied PDS in rural Haryana. Nearly one third of the respondents told that they did not get any information about the opening time and days. The research suggested that the quality of the supplied items from godown to FPSs and thereafter to the consumers should be inspected at multistage and there should be a proper monitoring system to keep eye on the functioning of FPSs. Proper monitoring of the FPSs should be done regularly regarding display of all the necessary information like entitlements, prices, BPL and AAY lists, opening timing and days, authorities for complaining and active and effective role of the Panchayati Raj Institutions in monitoring and functioning of the FPSs should be ensured.

Lalropuii (2017) studied management of public distribution system in Chhattisgarh and Mizoram. The study made an attempt to evaluate the performance of PDS in the states of Chhattisgarh and Mizoram based on the perceptions of the beneficiaries of PDS. The socioeconomic background viz., gender, age, religion, caste, size of the family, no. of male and female earning members etc of the household customers are presented. The household income; expenditure on food items; sources of purchase of food and consumption patterns are also highlighted.

### III. OBJECTIVES OF THE STUDY

This paper aims to compare the managerial practices of PDS in the select states of Chhattisgarh and Mizoram from the perceptions of the customers.

### IV. HYPOTHESES

This study also makes an attempt to test the following hypotheses.

$H_{01}$ : There is no significant difference between the perceptions of the respondents of the two select states regarding adequate information provided by the authority in relation to supply of PDS items.

$H_{02}$ : There is no significant difference between the respondents of the two select states regarding their response to the statement that the govt. had rightly set the criteria for identifying the entitled beneficiaries

### V. RESEARCH METHODOLOGY

A total number of 150 households were surveyed using purposive sampling method from each of two states by administering a structured schedule meant for the beneficiaries of PDS in select states. For the purpose of conducting the survey, the respondents were chosen from the capital cities of Raipur (Chhattisgarh) and Aizawl (Mizoram). Out of 300 selected households, 240 were selected from BPL category and the remaining 60 from APL category. In addition, among the beneficiaries belonging to BPL category, the poorest of the poor, come under the scheme of Antyodaya Anna Yojana (AAY). The proportion of BPL and AAY was in the ratio of 77 and 23 (as this is the ratio of total existing number of BPL and AAY card holders) in the country. Hence, the numbers of the respondents are BPL: 185, AAY: 55 and APL: 60, totaling to 300.

The hypotheses were tested by using Mann Whitney U test.

### VI. RESULTS AND DISCUSSION

#### EDUCATION LEVEL

The heads of the households were interviewed to gather information on the educational level of the respondents as shown in Table 1.

**TABLE 1: EDUCATIONAL LEVEL OF THE RESPONDENTS**

| State        | No. of respondents |              |        |                         |          |               |            | Total |
|--------------|--------------------|--------------|--------|-------------------------|----------|---------------|------------|-------|
|              | Parameters         | Under Matric | Matric | Higher Secondary School | Graduate | Post Graduate | Illiterate |       |
| Mizoram      | No.of families     | 128          | 17     | 3                       | 1        | 1             | -          | 150   |
|              | Percentage         | 85.3         | 11.3   | 2                       | 0.7      | 0.7           | -          | 100   |
| Chhattisgarh | No.of families     | 39           | 22     | 9                       | 4        | 4             | 72         | 150   |
|              | Percentage         | 26           | 14.7   | 6                       | 2.7      | 2.7           | 48         | 100   |
| Total        | No.of families     | 167          | 39     | 12                      | 5        | 5             | 72         | 300   |
|              | Percentage         | 55.7         | 13     | 4                       | 1.7      | 1.7           | 24         | 100   |

Source: Field Survey

The table reveals that in Mizoram, 85.3% of the respondents were under-matriculates and 11.3% had passed matric. There was no illiterate respondent in the state. According to *Statistic al Handbook 2014*, Mizoram has 91.33% literacy rate. In contrast, in Chhattisgarh, 48% of the respondents were illiterates and 26% of the respondents were under matriculate. Nearly 15% had passed matric.

### ADEQUATE PRIOR INFORMATION

It is attempted to know the response of the respondents to the statement “Adequate prior information is provided to the beneficiaries” by using Likert’s five point rating scale as shown in Table 2.

**TABLE 2: ADEQUATE PRIOR INFORMATION IS PROVIDED**

| State        | No. of respondents |                   |          |         |       |                | Total |
|--------------|--------------------|-------------------|----------|---------|-------|----------------|-------|
|              | Parameters         | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |       |
| Mizoram      | No. of families    | -                 | 1        | 18      | 121   | 10             | 150   |
|              | Percentage         | -                 | 0.7      | 12      | 80.7  | 6.7            | 100   |
| Chhattisgarh | No. of families    | 3                 | 3        | 6       | 132   | 6              | 150   |
|              | Percentage         | 2                 | 2        | 4       | 88    | 4              | 100   |
| Total        | No. of families    | 3                 | 4        | 24      | 253   | 16             | 300   |
|              | Percentage         | 1                 | 1.3      | 8       | 84.3  | 5.3            | 100   |

Source: Field Survey

The table shows that around 90% of the respondents in both the states were happy about the adequate prior information provided by FPS regarding the supply of items under PDS from the ration shop. 12% of the respondents in Mizoram and 4% of the respondents in Chhattisgarh expressed no definite opinion.

### PRICES CHARGED FOR PDS ARE REASONABLE

Table 3 shows the satisfaction level of the respondents on the reasonability of prices of PDS items in Chhattisgarh and Mizoram.

**TABLE 3: PRICES OF PDS COMMODITIES ARE REASONABLE**

| State        | No. of respondents |                   |          |         |       |                | Total |
|--------------|--------------------|-------------------|----------|---------|-------|----------------|-------|
|              | Parameters         | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |       |
| Mizoram      | No. of families    | 1                 | 1        | 47      | 100   | 1              | 150   |
|              | Percentage         | 0.7               | 0.7      | 31.3    | 66.7  | 0.7            | 100   |
| Chhattisgarh | No. of families    | 2                 | 0        | 5       | 98    | 45             | 150   |
|              | Percentage         | 1.3               | -        | 3.3     | 65.3  | 30             | 100   |
| Total        | No. of families    | 3                 | 1        | 52      | 198   | 46             | 300   |
|              | Percentage         | 1                 | 0.3      | 17.3    | 66    | 15.3           | 100   |

Source: Field Survey

Over 67% of the respondents in Mizoram and over 95% of the respondents in Chhattisgarh said the prices of the ration items were reasonable. Only negligible percent of the respondents expressed their dissatisfaction in this respect. But, in Mizoram, over 30% of the respondents have no definite opinion. It may be inferred that the respondents in Mizoram were more price sensitive as compared with their counterparts in Chhattisgarh.

### WRONG IDENTIFICATION OF BENEFICIARIES

In case of Mizoram, Parmod Kumar (2010) highlighted that criteria for BPL is based on “Score Based Ranking” of each household with 13 scorable indicators indicating their quality of life based on both economic and social indicators and the criteria for AAY is based on income which is nil or negligible. In Chhattisgarh, the families whose annual household income falls below Rs.11,000 fall in the category of BPL and local bodies in urban areas and gram panchayat in rural areas decide about AAY families based on the bottom income groups in the BPL list.

A question was asked to know whether the government had wrongly identified the beneficiaries not as per the criteria set as shown in Table 4

**TABLE 4: THE GOVT. HAD WRONGLY IDENTIFIED THE BENEFICIARIES**

| State        | The govt. had wrongly identified the beneficiaries |                |       |         |          |                   | Total |
|--------------|--|----------------|-------|---------|----------|-------------------|-------|
|              | Parameters   | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |       |
| Mizoram      | No. of families                                    | 1              | 52    | 90      | 7        | -                 | 150   |
|              | Percentage   | 0.7            | 34.7  | 60      | 4.7      | -                 | 100   |
| Chhattisgarh | No. of families                                    | 10             | 59    | 67      | 13       | 1                 | 150   |
|              | Percentage   | 6.7            | 39.3  | 44.7    | 8.7      | 0.7               | 100   |
| Total        | No. of families                                    | 11             | 111   | 157     | 20       | 1                 | 300   |
|              | Percentage   | 3.7            | 37    | 52.3    | 6.7      | 0.3               | 100   |

Source: Field Survey

The table shows that about 35% of the respondents in Mizoram and 46% of the respondents in Chhattisgarh were not happy with the identification of beneficiaries. Only about 5% of the respondents in Mizoram and about 10% of the respondents in Chhattisgarh were satisfied in this respect. A large number of the respondents (60% in Mizoram and 45% in Chhattisgarh) did not give definite opinion in this regard. This clearly shows the need to put utmost care by the government in identifying the beneficiaries.

### EXCESS RATION CARDS

It is further attempted to know the opinion of the respondents whether there were excess ration cards in circulation in the select states as shown in Table 5.

**TABLE 5: THE GOVT. HAS BEEN ISSUING EXCESS RATION CARDS**

| State        | The govt. has been issuing excess ration card |                |       |         |          |                   | Total |
|--------------|---|----------------|-------|---------|----------|-------------------|-------|
|              | Parameters                                    | Strongly Agree | Agree | Neutral | Disagree | Strongly disagree |       |
| Mizoram      | No. of families                               | 1              | 58    | 89      | 2        | -                 | 150   |
|              | Percentage                                    | 0.7            | 38.7  | 59.3    | 1.3      | 0                 | 100   |
| Chhattisgarh | No. of families                               | 5              | 62    | 75      | 8        | -                 | 150   |
|              | Percentage                                    | 3.3            | 41.3  | 50      | 5.3      | 0                 | 100   |

|       |                 |   |     |      |     |   |     |
|-------|-----------------|---|-----|------|-----|---|-----|
| Total | No. of families | 6 | 120 | 164  | 10  | - | 300 |
|       | Percentage      | 2 | 40  | 54.7 | 3.3 | 0 | 100 |

Source: Field Survey

The table shows that about 40% of the respondents in Mizoram and nearly 45% of the respondents in Chhattisgarh believed that their govt. had been issuing excess ration cards. Nearly 60% of the respondents in Mizoram and 50% of the respondents in Chhattisgarh did not have a definite say in this regard. This finding corroborates with the earlier finding in respect of wrong identification of the beneficiaries by the govt.

### INSPECTION OF FPS AT LOCAL LEVEL

A more specific question was asked in the form of a statement to know the perception of the respondents about monitoring of their own FPS by the state govt. as shown in Table 6.

**TABLE 6: THERE IS NO PROPER INSPECTION OF OWN FPS**

| State        | No. of respondents |                |       |         |          |                   | Total |
|--------------|--------------------|----------------|-------|---------|----------|-------------------|-------|
|              | Parameters         | Strongly Agree | Agree | Neutral | Disagree | Strongly disagree |       |
| Mizoram      | No. of families    | 8              | 74    | 65      | 3        | -                 | 150   |
|              | Percentage         | 5.3            | 49.3  | 43.3    | 2        | 0                 | 100   |
| Chhattisgarh | No. of families    | 11             | 96    | 36      | 7        | -                 | 150   |
|              | Percentage         | 7.3            | 64    | 24      | 4.7      | 0                 | 100   |
| Total        | No. of families    | 19             | 170   | 101     | 10       | -                 | 300   |
|              | Percentage         | 6.3            | 56.7  | 33.7    | 3.3      | 0                 | 100   |

Source: Field Survey

Table 6 shows that nearly 55% of the respondents in Mizoram and nearly 65% of the respondents in Chhattisgarh have agreed that there was no proper inspection of their own FPS. However, only 2% of the respondents in Mizoram and nearly 5% of the respondents in Chhattisgarh felt the other way. About 43% of the respondents in Mizoram and 24% of the respondents in Chhattisgarh were neutral. Overall results indicate that very few respondents have positive perception with regard to the monitoring of fair price shops in their state.

### VII. TESTING OF HYPOTHESES

The hypotheses framed for the present study were tested using Mann Whitney U test to determine whether significant differences existed between variables.

In this regard, it is attempted to test whether significant difference exists between the respondents of the two select states regarding adequate information provided by the authority in relation to supply of PDS items. The beneficiaries were asked to indicate how far they agree with the given statement. The responses were given based on Likert's five point scale ranging from strongly agree (5) to strongly disagree (1). Accordingly, the hypotheses were framed and tested as shown below:

#### HYPOTHESIS I:

$H_{01}$ : There is no significant difference between the perceptions of the respondents of the two select states regarding adequate information provided by the authority in relation to supply of PDS items.

**TABLE 7: MANN WHITNEY U TEST ON  $H_{01}$** 

| State        | N   | Mean Rank | Sum of Ranks | U-Value   | Remarks |
|--------------|-----|-----------|--------------|-----------|---------|
| Mizoram      | 150 | 149.27    | 22390.50     | 11065.500 | p>0.05  |
| Chhattisgarh | 150 | 151.73    | 22759.50     |           |         |
| Total        | 300 |           |              |           |         |

Source: Field Survey

From Table 7, it can be seen that the Mann Whitney test U value is 11065.500 with a p value of 0.698 which shows that there is no significant difference between the perceptions of the respondents of the two select states regarding prior information provided in relation to supply of PDS by the authority (Mizoram with sum of the ranks score of 22390.50 and Chhattisgarh (with sum of the ranks score of 22759.50).

## HYPOTHESIS II:

$H_{02}$ : There is no significant difference between the respondents of the two select states regarding their response to the statement that the govt. had rightly set the criteria for identifying the entitled beneficiaries.

**TABLE 8: MANN WHITNEY U- TEST  $H_{02}$** 

| State        | N   | Mean Rank | Sum of Ranks | U-value  | Remarks |
|--------------|-----|-----------|--------------|----------|---------|
| Mizoram      | 150 | 178.76    | 26814.50     | 7010.500 | P<0.05  |
| Chhattisgarh | 150 | 122.24    | 18335.50     |          |         |
| Total        | 300 |           |              |          |         |

Source: Field Survey

From Table 8, it can be seen that the Mann Whitney U value is 7010.500 with a p value of .000 which shows that there is a significant difference between the respondents in their response to the statement that the govt. had rightly set criteria for PDS entitlement between Mizoram (with sum of the ranks score of 26814.50) and Chhattisgarh (with sum of the ranks score of 18335.50).

## MAJOR FINDINGS

- There were no illiterate respondents in Mizoram. Over 85 % of the respondents were under-matriculates and 11.3% had passed matric. In contrast, 48% of the respondents in Chhattisgarh were illiterates and 26% of the respondents were under matriculate. Nearly 15% had passed matric.
- Around 90% of the respondents in both the states were happy about the adequate prior information provided by FPS regarding the supply of items under PDS from the ration shop.
- Over 67% of the respondents in Mizoram and over 95% of the respondents in Chhattisgarh said the prices of the ration items charged items were reasonable.
- About 35% of the respondents in Mizoram and 46% of the respondents in Chhattisgarh were not happy with the identification of beneficiaries.
- About 40% of the respondents in Mizoram and nearly 45% of the respondents in Chhattisgarh believed that their govt. had been issuing excess ration cards.
- Nearly 55% of the respondents in Mizoram and nearly 65% of the respondents in Chhattisgarh have agreed that there is no proper monitoring (inspection) of their own FPS.



- There is no significant difference between the perceptions of the respondents of the two select states regarding prior information provided in relation to supply of PDS by the authority.
- There is a significant difference between the respondents in their response to the statement that the govt. had rightly set criteria for PDS entitlement between Mizoram.

### VIII. CONCLUSION

PDS has been criticized for its urban bias and its failure to serve the poorer sections of the population effectively. The respondents of the two select states were satisfied with regard to prior information provided by the authorities relating to supply of PDS. However, nearly 55% of the respondents in Mizoram and nearly 65% of the respondents in Chhattisgarh were not satisfied about proper inspection of their own FPS by the authorities. Over 67% of the respondents in Mizoram and over 95% of the respondents in Chhattisgarh felt the prices of the ration items were reasonable. About 35% of the respondents in Mizoram and 46% of the respondents in Chhattisgarh were not happy with the identification of beneficiaries. About 40% of the respondents in Mizoram and nearly 45% of the respondents in Chhattisgarh believed that their govt. had been issuing excess ration cards. Nearly 60% of the respondents in Mizoram and 50% of the respondents in Chhattisgarh did not have a definite say in this regard.

The findings suggest that both the state governments need to relook into the criteria set for identifying the entitled beneficiaries under PDS and focus more on the regular inspection of FPSs to make PDS more dependable for the vulnerable sections of the society. Further, it is observed that the Manual of Chhattisgarh's government is clear in fixing the responsibility of identification of families below poverty line and Antyodaya families. The Gram Sabha in rural areas, the local bodies in urban areas and the Cantonment Board in Cantonment areas were made responsible in the task of identification of the beneficiaries. However, in case of Mizoram, there is no such rational method of identification of the beneficiaries which resulted in the issue of ration cards to many families leading to the inclusion error. The PDS in Mizoram has been widely criticized on the ground of issue of many bogus cards. Therefore, the state government of Mizoram must make concerted efforts to strengthen its PDS so that only the targeted households would get the intended benefits.

There is a separate section in the Chhattisgarh's Manual where rules regarding issuance of ration cards to different beneficiaries are mentioned. It also contains the details relating to the inspections and verification of ration cards. However, the Manual issued by the Govt. of Mizoram has no such details. It is observed that the system of supervision and vigilance is not found effective in Mizoram. Thus, the Govt. of Mizoram must put required efforts to make the system of supervision and vigilance effective and efficient in order to prevent the leakages.

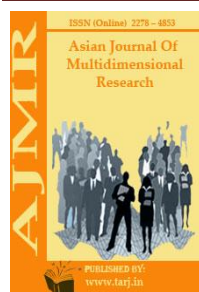
### IX. REFERENCES

- [1] Ananda, D. (2008). *State response to Food Security: A study of the Public Distribution System in Anantapur district of Andhra Pradesh*. Ph.D thesis (Unpublished), University of Hyderabad.
- [2] Alamu, R. (2011, September 24). PDS: It just works in TN. *The Hindu*, Retrieved from <http://www.thehindu.com/arts/magazine/article2475948.ece> .
- [3] Chatterjee, Mihika. (2014). An Improved PDS in a Reviving State-Food Security in Koratpur, Odisha. *Economic and Political Weekly*, XLIX (45), pp.49-59.

- [4] Kavita, (2014). *Public Distribution System in Rural Haryana: An Evaluation*. Ph.D thesis (Unpublished), India: Maharshi Dayanand University.
- [5] Lalropuii, (2017). *Management of Public Distribution System in Chhattisgarh and Mizoram: An Evaluative Study*. Ph.D thesis (Unpublished), India: Mizoram University.
- [6] Parmod, Kumar (2010). *Targetted Public Distribution System – Performance & Efficiencies*. Academic Foundation, New Delhi
- [7] Parsai, Gargi.(2012). Digitisation help weed out 2.96 crore bogus ration cards. *The Hindu*, 14 January, p.20.
- [8] *Statistical Handbook* (2014).Department of Economics and Statistics. Aizawl. Mizoram: Government of Mizoram
- [9] [www.hindu.com/mag/2010/11/14/stories/2010111450010100.htm](http://www.hindu.com/mag/2010/11/14/stories/2010111450010100.htm) “Chhattisgarh Shows the Way,” Accessed on March 1, 2013.

#### NOTES

- [1] <http://www.businesstoday.in/current/economy-politics/india-has-highest-number-of-people-living-below-poverty-line-world-bank/story/238085.html> accessed on 17.7.2017
- [2] <http://www.dailypioneer.com/state-editions/raipur/8838-ration-cards-in-chhattisgarh-aaadhar-linked-say-officials.html> accessed on 17.8.2017



## LIVELIHOOD OF FISHING COMMUNITY AND WATER POLLUTION OF MAHANADI RIVER: A STUDY IN ODISHA

**Subal Tandi\*; SudamTandi\*\***

\*Research Scholar,  
Department of Sociology,  
Sambalpur University, INDIA.  
Email id-subaltandi@gmail.com,

\*\*PhD Research Scholar,  
Centre for Social Exclusion and Inclusive Policy,  
School of Social Science,  
University of Hyderabad, INDIA.  
Email id-sudamtandimsw@gmail.com

### ABSTRACT

*This paper analyses the local fisheries community (Keunta Caste) which have been depending on Mahanadi River's resource for a generation to generation are easily deprived of its caste-based occupation. Mahanadi River presents a complex ecosystem with the big trader. This River is now complicit between the Keunta community and outsider businessmen. The traders have captured traditional based occupation with commercial exploitation with unauthorized encroachments for fishing culture on the bank of river Odisha. Hence, fishing and river are interrelated in this case; the objectives of the paper examine socio-economic conditions, river pollution, infrastructural facility, role of state governments and civil society with regard to affected Keunta Communities. The aim of this study is intensely subjected to survival and livelihood pressure of Keunta community. Hence, the livelihood of the Keunta community and preserving bank of ecosystems is crucial for the Mahanadi River for sustainability. Sambalpur district were selected purposively from Mahanadi region of Odisha. From two villages with 52 fishermen was selected randomly. Interview Schedule and Participatory Observation have been used for data collection. We found the several problems of Keunta Community of Tulandi Village whereas situated on the bank of Mahanadi River. Water pollution is a major issue due to industrial effluents and blasting. Moreover, they are adopting traditional infrastructure method for bringing and catching the fish in order to production and selling. They survived their traditional occupation with very difficult because of water blasting in the river by the outsider commercial people. As a result, the*

*production of fish gradually decreases day to day life. Different agencies (NGOs, Co-Operative etc.) were working for development of fishing as an occupation but there was no such fruitful result to satisfy of the communities.*

**KEYWORDS:** *Caste Based Occupation, Keunta Community, Mahanadi River, Water Blasting, Water Pollution*

---

## 1.0 INTRODUCTION

Historically, the structural inequality and deprivation are determined by the discrimination on the line of caste in India (World Bank 2011). Ambedkar (1979) found that caste is a very vast problem both theoretical and practically. Practically it acts as institutions that stretch-forth the tremendous consequences such as unequal occupation, poverty, inter-group conflict. Thorat (2015) found the Ambedkars' idea of the graded inequality which is the unique feature of the Indian caste system. If we were moved from top to bottom of the caste ladder, then we find a remarkable difference in occupation and per-capita income among the different social groups. The caste based occupation associated with the institution of caste as it has following consequences, first it adversely affect the economic growth of the nation, secondly it create poverty and inequality and lastly it act as a shock to the lower social status. In this sense, Thorat (2012) argues that the customary rules and norms regarding the occupation, employment, social status, dignity of labour are framed in such a way that involves denial of social, economic right and educational rights and thus resulted poverty and deprivation of the lower caste in general.

In the other sense, Socio-economic variations are represented by caste in Indian context plays a significant role when it comes to measuring occupational structure amongst various caste groups. It has become very difficult to make analysis of occupational characteristics of Scheduled Caste within study region, due to there is large variety of occupational categories classified by Census authorities in (Census 1981, 1991 and 2001). In its classical construct, different caste groups specialized in specific occupations and exchanged their services through an elaborate system of division of labour. Though asymmetry in position of various caste groups was recognized what it emphasized was not inequality in rights over land but the spirit of community.

Odisha is one of the poor states of India and which is not free from the caste-based occupation which was therefore conclusive (Thorat 2005). Panigariya (2013) found that the poverty among the SCs and STs are 39.0 percent and 62.5 percent respectively in 2012, which is much higher than all Odisha level i.e. around 33 percent. Therefore the main concern of the paper is the caste based occupation on the bank of river of rural area and as an institution how it affects the changing pattern of occupation on the banks of rivers and ultimately what are the factors responsible for diversification of their traditional livelihood.

## REVIEW OF LITERATURE

Kumar and Kumar (2013) studied that the fish diversity in the Mahanadi River was in no way exceptional from the current impact of global warming and climate change. The study on fish diversity of the Mahanadi has been undertaken which classifying the existing diversity of fish species in the Mahanadi River into ornamental fishes is an untouched area. It was observed a significant number of fish species having potential ornamental properties were there amongst them.

Gillian and Maud (2009) pointed out that only 10% of the workforce provided employment in a small number of parts of rural Scotland dispersed across both east and west coasts and both north and south. This studies that have documented the impact of social change on family and community life in these fishing dependent localities have primarily focused on fishing towns and villages with long traditions of fishing on the east of Scotland, and particularly the North East. It was noted that 'fishing families' and the practices of passing the occupation from father to son were in terminal decline, along with fishing communities. Because of youth people were discouraged from entering their caste based occupation as well as the boats disappear from some traditional fishing villages.

Mishra and Nayak (2014) examined human life is threatened due to pollution of water both from surface and underground due to that the growth of the modern era. The doctors forecast that several stomachs, lever and skin diseases spread due to polluted water. In the state of Orissa, the scarcity of pure drinking water is so much felt that 50 percent of urban people and 80 percent of rural people were affected by water pollution. In the present research paper revealed that the status of pollution of water in two major rivers namely Mahanadi and Brahmani of Odisha has been analysed. The main pollutant of water in Mahanadi was the sewerage systems in sambalpur and Cuttack town whereas the main pollutant of Brahmani was the effluents of Rourkela steel plant and many other chemical factories.

Ramakrishna, Shipton and Hasan(2013) focused on the feed management practices associated with Indian major carp production; management practices that are used under poly culture conditions with other species-groups were also assessed. The study revealed that mash feed was the most popular and widely used feed type. De-oiled rice bran was used as the principal feed ingredient, followed by groundnut cake and cottonseed cake. Another feeding method called as rope and pole feeding which Grow-out farmers feeding mash feeds used variants of a bag. In the nursery and rearing ponds, the commonly used feed ingredients included groundnut cake, de-oiled rice bran and raw rice bran.

### **PROBLEM OF THE STUDY**

In order to enhance the fishing production India has adopted modern methods and techniques of cultivation after green revolution. No doubt production has increased some extent; it has its negative impact on caste based occupation system as well as pollution on the rivers Odisha. The present paper revealed that fishermen (keunta) were not interest in their traditional occupation in their fields due to water blasting. The blasting is the major problem of fishing on bank of river of Mahanadi. The water blasting is a technique for cleaning internal and external surfaces, which relies entirely on the sheer force of water from a pressurized source to achieve the desired cleaning effect on the intended. The water blasting are organised by the businessmen and outside contractor in order to immediate benefits, as a result it destroy all species in water and affects water pollution. It was important that water blasting was done at Tulandi village by incorrect manner. Therefore, they did not engaged their caste based occupation.

### **OBJECTIVE OF THE STUDY**

The following objectives of the study should be kept in mind of affected families are given.

- 1) To study the demographic profile and socio-economic conditions of affected Keunta community of Odisha.

- 2) To examine the accessibility infrastructural facility and river's pollution with regard to the occupation of Keunta community.
- 3) To examine the role of state governments and civil society of Odisha pertaining the development of fishing of Keunta community.

## METHODOLOGY

Tulandi (Revenue Village) and Bhaliapali (Hamlet Village) villages were selected for the study area of Kourdola Gram Panchayat of Dhankouda Block of Sambalpur District of Odisha in the month of January-February of 2016. These two villages located situated on the bank of Mahanadi River and 30km from Sambalpur district headquarter. These two villages cover 937.69 ac lands and out of these 651.69 ac of land was irrigated land. The total population of these two villages was 846 population which were given the data by Anganwadi and Headmaster of primary school in Tulandi village. The census report which has been collected in seven days and others 23 days we collected data with primarily focused fishery communities. For the census study we met Sarpancha, AWW, ASHA and headman of the villages. They provided household list of the village. Then, we purposively selected only fishermen families as our respondents. This field study was exploratory research in a nature and the sampling has been used purposive and random sampling method. The total sample size of the study was 52. All respondents (male and female) were fishermen families belonging to the schedule caste (Keunta Caste).

The data were collected for the year January-February 2016, which were analysed and presented into suitable tables to draw meaningful conclusion. The technique of data collection has been used the both primary and secondary data. In primary data we used interview schedule having open ended and close ended questions which has been collected data from door to door. The study is based on participatory observation method because we stayed 30 days with them in order to look into their day to day activities with regard to how their livelihoods are sustaining in the study areas. The secondary data has been used from R.I office, G.P office, different the journal, books, websites, District statistical handbook.

## RESULT OF THE STUDY:

The following are the result of changing pattern in livelihood of Keunta community and their concern for Mahanadi River in association with water pollution and health concern.

### Socio-Economic Condition of the Respondents

The socio-economic condition can be treated as the dependent variables. The present study has attempted to provide an account of the socio-economic conditions of the selected respondents. The table below is taken because education and awareness with occupation plays an important role to interrelate to each other. Education also helps one to get knowledge of the needs to train in the field of fishing.

**TABLE NO-1 SOCIO-ECONOMIC CONDITION OF THE RESPONDENTS**

| Particular                   | Tulandi | Bhaliapali | Overall |
|------------------------------|---------|------------|---------|
| No of Fishermen              | 35      | 17         | 52      |
| <b>Gender-wise selection</b> |         |            |         |
| Male                         | 25      | 10         | 35      |
| Female                       | 12      | 5          | 17      |



|                           |    |    |    |
|---------------------------|----|----|----|
| Total                     | 35 | 17 | 52 |
| <b>Educational status</b> |    |    |    |
| Literature                | 7  | 6  | 13 |
| Illiterature              | 30 | 9  | 39 |
| Total                     | 37 | 15 | 52 |
| <b>Occupation</b>         |    |    |    |
| Fishing                   | 12 |    | 12 |
| Agriculture               | 18 | 14 | 33 |
| Others                    | 6  | 2  | 7  |
| Total                     | 36 | 15 | 52 |

(Source: Primary study 2016)

The above table no-1 shows that the respondents of male members are 35 and female members are 17 out of 52 respondents. The female respondents have been chosen one half of male members. The above table shows that educational qualification of respondents. Out of 52 respondents 39 numbers (75 per cent) of respondents were illiterate and 13 respondents who were literate. It is apparent that majority of respondents were illiterate. It is observed that they had not got educational facility to go schooling due to lack of communication. This study supports the view that the educated fishermen have better utilization of their occupation than the illiterate and common.

Occupation of the respondents is an important factor to determine livelihood. The details about the occupation of the respondents represented in above table as follows: Majority of respondents were cultivator that were 33 (63.46 percent). Similarly, 23.07 percent (12 numbers) of the respondents are occupying fishing as their primary occupation. Only 7 (13.46 percent) of respondents were working different job. They were peon, supervisor, small business man and shopkeeper etc. It is observed that Keunta community have not interested to do caste based occupation and they have been indifferences toward fishing as an occupation due to several reason which is describe in the below paragraph.

### LAND HOLDINGS OF THE RESPONDENTS

Land Holdings of the Respondents is an important factor to determine the livelihood pattern of a family. The details about the land holdings of the respondents has represented in this table as follows:

**TABLE NO-2 LAND HOLDING PATTERN OF THE RESPONDENTS**

| Sl No. | Land                    | Frequency (N=52) | Percent |
|--------|-------------------------|------------------|---------|
| 1      | No land                 | 18               | 34.61   |
| 2      | Below two acre land     | 24               | 46.15   |
| 3      | More than two acre land | 10               | 19.23   |
| 4      | Total                   | 52               | 100.0   |

(Source: Primary study 2016)

In the above table no-2, the study found that 18(34.61percent) of respondents replied they don't have land. They completely depend upon fishing and daily wage labour. As regards to land

holding 24 (46.15 percent) possessed land below two acres. Similarly, 10(19.23 percent) of respondents have more than two acre land. Those who had no land, they were poor families. The most proportion of Keuntafamilies was living in poor condition. Poverty is a key determinant of their livelihood. It results low investment to occupational background. It is revealed by respondents that due to no land property for cultivation. So their income level was unbearable in the investment level of the respondents.

### ANNUAL INCOME OF THE RESPONDENTS

Income of the individual determines such as standard of living, occupational structure etc. Hence, it is necessary to know about the income of the household of keunta community of the study which describe in the following table.

**TABLE NO-3 ANNUAL INCOME OF THE RESPONDENTS.**

| Sl no | Annual income in Rs | Frequency (n=52) | Percentage |
|-------|---------------------|------------------|------------|
| 01    | 10,000 to 20,000    | 25               | 48.07      |
| 02    | 20,000 to 30,000    | 03               | 5.76       |
| 03    | 30,000 to 40,000    | 04               | 7.68       |
| 04    | 40,000 to 50,000    | 10               | 19.2       |
| 05    | 50,000 to 60,000    | 05               | 9.6        |
| 06    | 60,000 to more      | 05               | 9.6        |
|       | Total               | 52               | 100        |

(Source: Primary study 2016)

The above table no: 3 presents the annual income of the household of respondents. 25 (48.07 percent) of the respondents their annual income had 10,000 to 20,000. It is hardship to financial manage whole the year because poverty. Another 03 (5.76 percent) of the respondents their annual income had 20,000 to 30,000. Likewise 04 (7.68 percent) of the respondents of their annual income had 30,000 to 40,000. Similarly 10 (19.2 percent) of the respondents of their annual income had 40,000 to 50,000. 05 (9.6 percent) of the respondents of their annual income had 50,000 to 60,000. Finally 05 (9.6 percent) of the respondents had annual income above 60,000. We found that maximum number of the respondents were poor. Thus they do not able to use the modern technique of their occupation.

### WATER POLLUTION IN MAHANADI RIVER

Water pollution is the spot of water bodies (rivers, lakes, and groundwater etc, usually as a result of human activities. Water pollution results when contaminates are introduced into the natural environment.

**TABLE NO-4 POLLUTION RELATED MATTER DISCUSS WITH THE RESPONDENTS**

| SL NO | Pollution            | Frequency (52) | Percentage |
|-------|----------------------|----------------|------------|
| 1     | Sewage               | 5              | 9.61       |
| 2     | Industrial Effluents | 8              | 15.38      |
| 3     | Pesticides           | 13             | 25         |
| 4     | Blasting             | 26             | 50         |
| 5     | Total                | 52             | 100        |

(Source: Primary study 2016)

What is the major reason of water pollution in the Mahanadi River? In the above table no-4 examines 26(50 percent) of respondents replied the water blasting is main cause of the water pollution in Mahanadi River. Water blasting is a method to use of high pressure water for cleaning as a result fishes are died and floating on the water whereas the production level will be high at short term. It has been done by the big traders for their immediate benefit. Therefore, Keunta Communities have been alienated from their caste based occupation. Similarly, 5(9.61 percent) of respondents have argued that the discharge of sewage from the municipality. Moreover, 8 (15.38 percent) of respondents mentioned the industrial effluents also affected water pollution. Sewage and industrial influents also damage the river because of this two village are situated nearby city (Sambalpur town) and industrial (e.g. Mahanadi coalfield Mines) location sothat pollution level in the river was increasing day to day life in this area. Others 13 (25 percent) of respondents have reported that the pesticides harm the water of Mahanadi River. How the pesticides come into the Mahanadi River? The pesticide is common source from double crop agricultural field so that this area addicted to use harmful pesticide. Thus, the use of various types of inadequate technology, sewage, industrial effluents and pesticides and insecticides in agriculture cause water Mahanadi has raised concerns about environmental pollution.

### **EFFECT OF WATER POLLUTION ON HEALTH OF FISHERMEN**

Health is so important of fishermen because of it is risky factor of livelihood and their environment. The table below shows the health status of the respondents.

**TABLE NO-5 HEALTH PROBLEM OF THE RESPONDENTS**

| SL NO | Health Disease | Frequency(N=52) | Percentage |
|-------|----------------|-----------------|------------|
| 1     | Skin           | 32              | 61.53      |
| 2     | Ortho          | 5               | 9.61       |
| 3     | Viral fever    | 6               | 11.53      |
| 4     | Malaria        | 9               | 17.30      |
| 5     | Total          | 52              | 100        |

(Source: Primary study 2016)

The above table no-5 shows that health status of respondents whereas 32 (61.53 percent) of respondents suffered in skin disease because of water pollution. Another's 5(9.61 percent) of respondents were fallen in Ortho disease. Similarly, 6 (11.53 percent) of the respondents suffered from Viral fever and 9 (17.30 percent) of the respondents were affected by Malaria disease. It was found that health problem is major challenge of fishermen in the area. It is found that why skin disease is more spread in the fishermen. Because of sewage, biochemical waste and pesticide come into the river and polluting to the water as a result most the fishermen suffered from this disease. However, the people were trying to solve to this problem but they unable to do it. As a result of now, it is noticeable that among the fishermen have feared due to water pollution.

### **INFRASTRUCTURE FACILITY FOR FISHERMEN**

Basic infrastructure facility of the respondents is also an important factor to determine their caste based occupation. Hence," how it helpful to the fishing community? The below table represents details about the infrastructure facility of the respondents as follows: The study is found during field work they had less access to basic necessities boat, bi-cycle, motor cycle, mobile (Toll free number), and electricity etc.

**TABLE NO-6 INFRASTRUCTURES FACILITY OF THE FISHERMEN**

| SL NO | Infrastructure      | Frequency(52)             | Percentage |
|-------|---------------------|---------------------------|------------|
| 1     | Boat                | 8(out of 52 respondents)  | 15.38      |
| 2     | Bi-Cycle            | 40(out of 52 respondents) | 76.92      |
| 3     | Motor Cycle         | 14(out of 52 respondents) | 26.92      |
| 4     | Mobile              | 28(out of 52 respondents) | 53.84      |
| 5     | Helpline Number     | 6(out of 52 respondents)  | 11.53      |
| 6     | Electricity         | 20(out of 52 respondents) | 38.46      |
| 7     | Storing Centre (02) | 52(out of 52 respondents) | 100        |

Source: Primary study, 2016

In the table no-6 explain the proportion of household without boat facilities is very lower. Very few families own boat facility that is 8 (15.38 percent) of respondents. In spite of several government facilities provided in term of boat facilities are still not ensuring. Most of the family did not accept of need of this facility to ensure the better production level of fish. The study shown that 40 (76.92 percent) respondents, they had Bi-Cycle facility to bring fish production to market place. Similarly, 14 (26.92 percent) respondents, they possessed Motor Cycle facility which is very less proportion as compared to not having such facility. So they did not sell proper mechanism. Further, 28 (53.84 percent) of respondents had Mobile Phone facility but 06 (11.53 percent) of respondents had not Helpline Number. Helpline Number provides basic training and awareness facility at the time of production. But fishermen did not get such type of this facility as proportion level. Among of 20 number of respondents (38.46 percent) reported they had electricity facility to their household. On account of lack electricity the respondents did not get proper information regarding marketing and training facilities of fishing. The study is found during field work they had less access to necessities infrastructure facility e.g. boat, bi-cycle, motor cycle, mobile (Toll free number), and electricity that results less attitude of traditional based occupation. Along with that, there are two storing centre to store fish at Chiplima and Khutlipali. We observed to found that most of the fishermen did not get chance to store their product because of complex bureaucratic rules so that the interests of fishing in this area are becoming the less and less. Thus, it is low infrastructure give result of low fish production.

#### **FISHING TOOLS USED BY FISHERMAN**

The traditional and modern tools have been used by the fisherman for catching the fish in the river. There are some traditional and modern types of tools which describe in the following paragraph

**TABLE NO-7 FISHING TOOLS USED BY THE RESPONDENTS**

| SL.NO | Type of Tools | Frequency (N=52) | Percentage |
|-------|---------------|------------------|------------|
| 1     | Traditional   | 39               | 75         |
| 2     | Modern        | 13               | 25         |
| 3     | Post-Modern   | 00               | 00         |
| 4     | Total         | 52               | 100        |

(Source: Primary study 2016)

The above table no-7 shows that out of 52 respondents 39 numbers (75 per cent) of respondents were using traditional tools. Why maximum numbers of respondents have been using the traditional method to catch fishes? Because of this traditional based method tools applied generation by generation as well as the fishermen could not get sufficient level of modern tools

from the state government and local NGOs as a result the cultural product (e.g. fish) does not survive their traditional based occupation. There are some kind of traditional tools which were used by fishermen which are Jal (parasuta, phica, melbal, sonki, chheken, kanen, dharghat, dandhar plastic), Chiran, Benda, Girna, Kumuna, Dhila, Lightfond, Daun (neil), Garilathi, hupi, wood-Boats etc. Normally the non-motorized boats operate on the bank water in a periphery of 7 Km. Moreover, 25 percent of respondents had used modern type of tools ( e.g. Fishing Rods, Fishing Reels, and Fish Hooks etc.) which have getting from state government and local agency (e.g. ATMA NGOs). Hence, they were using modern type of tools. Here we observed that “why they have not getting modern and extra modern tool facility?” because of the programme and policy of the government and NGOs are not proper channel to reach the real benevolent. So the production levels have been gradually decreasing as a result the people of fishing community shifted their occupation to others sector with low income.

### ROLE OF GOVERNMENTS AND NGOS FOR FISHING COMMUNITY

The role Government and NGOs are playing crucial role in providing the training programme and financial assistant to the fisheries community. Let's know what are function of the government and local NGOs? Which are given the data in the following table.

**TABLE NO-8 ROLE OF THE GOVT. AND NGOS FOR FISHING COMMUNITY**

| SL NO | Roles of Govt. and NGOs | Frequency(52) | Percentage |
|-------|-------------------------|---------------|------------|
| 1     | Loan                    | 13            | 25         |
| 2     | Training                | 19            | 36.58      |
| 3     | Tools                   | 20            | 38.46      |
| 4     | Total                   | 52            | 100        |

Source: Primary study, 2016

The above table no-8 25 (13 number) percent of respondents were receiving loan from both government banks, Primary Agricultural Credit Society (PACS), and NGOs (ATMA) sector. Others fishermen took loan from informal sector (relative, neighbourhood and money lender etc.) which are high interest rate that was 12 percent. Therefore they were facing financial crises for fishing. The study revealed that 19(36.58 percent) of respondents have been getting training for fishing from a NGOs which name is ATMA( Agricultural Technology Management Agency ).However, the majority of fishermen are excluded from such type of benefit from this sector. This is also main reason to less interest the caste based occupation. Moreover, 20 (38.46 percent) of respondents have got fishing equipment from the government under such as Matsyajibiunnayanyojana. They expressed that the role of the NGOs and Government agency were not willing to provide any satisfactory services to them. At last, we found in the study that it is not sufficient role of the government and NGOs in relation to fishing community.

### SOCIO-ECONOMIC BENEFITED FROM GOVT. AND NGOS

The fishermen were getting socio economic benefit from the government and NGOs sector but are they satisfy or not? The tables below shows satisfy nature of the respondents.

**TABLE NO-9 SOCIO-ECONOMIC BENEFITED OF THE RESPONDENTS**

| Sl No | Satisfied | Frequency (52) | Percentage |
|-------|-----------|----------------|------------|
| 1     | Yes       | 12             | 23.07      |
| 2     | No        | 40             | 76.96      |
| 3     | Total     | 52             | 100        |

(Source: Primary study 2016)

The above table no-9 describes the satisfaction level of respondents with regard to the role of the government and civil society. 40 (76.96 percent) of the respondents did not satisfied the work of government and NGOs in order to their livelihood and sustainability of the environment. They are not satisfied with the govt. and NGOs because of communication gap, lack of awareness, illiteracy and poverty etc. 12 (23.07 percent) of the respondents satisfied with the work of the govt. and NGOs. The reason of the their satisfaction are such as the training facilities, the loan facilities, adoption new technology for their livelihood. It is found that they have been getting some benefit such as training of pisciculture and financial support of the government.

## **DISCUSSION**

The following are some discussion with regard to livelihood of Keunta community and conservation of ecosystem of Mahanadi River.

### **FISHERMEN AND THEIR LIVING CONDITION**

The socioeconomic characteristics of fishermen were observed to be poor and disturb their livelihood with limited means and resources. The income levels of the people were very poor which 48 percent of respondents their annual income was 10,000 to 20,000. Because fishing was a main source of income in the community but they gradually shifting their primary occupation to others sector due to environment pollution. The education level also low the community which was found that there were 13 (25 percent) illiterate in the village and literate 39 (75 percent) persons in the villages. Therefore, they could not get proper training facility and awareness regarding to fishing.

### **GENDER PARTICIPATION IN FISHING MARKETING**

Women are more likely to engage in activities to sell the fishes in the market. 33 percent of women respondents reported that they had to bring the fishes on their head with bared foot and walk 5 to 7 K.M. Women of Keunta community claim that they engaged 16 hours to works in different activities such as domestic, agricultural practice and their caste based occupation but they have no voice in decision-making with regard to fish production. The women respondents reported that they have been suffering from skin disease, viral fever, malaria and Ortho etc. due to water pollution in Mahanadi River. Water pollution is a major environmental challenge in the river. This study found that the women of Keunta community engaged in fisheries related and allied activities include transporting, fish loading/unloading, trading, net making, and boat repairing building, repairing or any other activity directly or indirectly related with fishery. All women respondents argued that they did not get training facility from the government and NGOs but the male member of their household had got some training facility in relation to caste based occupation.

### **FISHING COMMUNITY AND THEIR CASTE BASED OCCUPATION:**

The traditional Keunta community is widely accepted as an indigenous community of Odisha whereas caste based occupation is fishing. Capitalist development and urbanisation has impoverished the fishing community from their living spaces and livelihoods. The effects of larger processes of transformation of their occupation are observed in increasing attack of water pollution in the river, inappropriate technology (water blasting), lack of infrastructure facility, competition from commercial fishing and indifference of the programme and policy.



## **ENVIRONMENTAL CHALLENGES OF KEUNTA COMMUNITIES**

The diverse environmental challenges that were discovered in Keunta Communities which we found that river pollution caused by the spiralling sewage, industrial effluents, pesticides and water blasting. Water blasting in the Mahanadi River is serious problem for the Keunta community which reported by 50 percent of the respondents that affected their traditional occupation. Water blasting has been done by outsider capitalist class who immediate to catch large amount of fishes from the river that had depleted enormously the population of fishes and falling negative impact (e.g. water pollution) on livelihood of the fishermen community. The sewage, industrial affluent and pesticide water are also more responsible for water pollution in the river which was 50 percent of the respondents reported. Pollution in Mahanadi River of probably causes more illness of human being than any other environmental influences. The sewage, industrial affluent and pesticide water are responsible for several water borne diseases (such as skin infection) which were 62 percent of the respondents reported.

## **INFRASTRUCTURE FACILITIES OF THE COMMUNITIES**

The fishes are not properly sold by them due to lack of storing, communication (transported by head loads to the markets for sale) and marketing facility. There were two storing facility but the fishermen could not get proper facility from the storing centres due to lack attention of bureaucratic rules. 53.84 percent of the fishermen had cell phone facility but only 11.53 percent had keep Helpline Number. It was very less percent of community people who communicate regarding fish production. Only 15 percent fishermen kept the boat that was not sufficient for catching fishes from the river. They demanded to the government for boat but it was not fruitful. 27 percent of the respondents had motor cycle facilities that help to good transportation for marketing but maximum fishermen were marginalised from this type of facility. Similarly, this community also did not accessible of good infrastructure facility still they used the tools which based on traditional method which reported by 75 percent of the fishermen as a result that give low level production of fish product. Thus, the community specifically complained about the lack of storing, marketing, modern equipments, transportation, communication and electricity that could have enhanced community efforts in ensuring sustain livelihood and environmental protection

## **PARTICIPATION OF STATE GOVERNMENT AND CIVIL SOCIETY**

The role of state government and NGOs were conscious of the traditional based occupation. However, the state government and local NGOs neglect and failure to manage to fishing as an occupation on the Mahanadi River in Sambalpur district of Odisha. The government and NGOs provide training and financial support to the fishermen through Matsyajibiunnayanyojana and ATMA NGOs but we found that 77 percent of the fishermen could not satisfy with the role the govt. and civil society. Therefore, it should be the intention of bringing a balance among needs of infrastructure facility, preservation of the ecosystem, and livelihood security of the fishing community.

## **CONCLUSION**

We draw conclusion that the present generation of Keunta Community cannot get opportunity to survive the caste based occupation. So the caste based occupation has been altering as entry of capitalism and business men in fishing business. The Keunta communities are shifting towards cultivation and agriculture labourer. Rather, they become more vulnerable and daily wage

labourer and lost their occupations as fishing. The big business men are destroying the ecosystem of the Mahanadi River by blasting without caring the sustainability of the other species. They (Keunta communities) are underprivileged from several reasons which are water blasting, water pollution in the river, improper infrastructure mechanism for them, and unsatisfactory role of the Government and NGOs sector where they are working for their development. It is apparent that from our field visit to observed that the people of Keunta Community alienated from their traditional based occupation and diversified to others sector. Further, the new generations of this community feel discouraged to opt for their traditional occupation. In fact, the governmental policies and programme with regard to alternative livelihood of this community and conservation of the ecosystem of the Mahanadi River is not ensuring for sustainability.

## REFERENCES

Akerlof, G., 1976, "The economics of caste and of the rat race and other woeful tale", *the Quarterly Journal of Economics*, Oxford university press, Vol-90, No-4 (Nov., 1976), PP-599-617, viewed 5 January 2015, Available from <http://www.jstor.org/stable/1885324>.

Borooah, V. K., Sabharwal, N. S., Diwakar, D. G., Mishra, B. K., and Naik, A. K., 2015, "Caste, discrimination, social exclusion in modern India", *sociological bulletin*, vol.66, issue No.3 pp.380-382, Viewed 10 November 2017, Available from <https://doi.org/10.1177/0038022917727090>

Gillian, M and Maud, P., 2009, "Social change in Scottish fishing communities: a brief literature review and annotated bibliography", *Queens Printers of Scotland*, Scottish Government Social Research, Admail, ADM 4058, pp.1-38 viewed 15 October 2015, available from [www.scotland.gov.uk/socialresearch](http://www.scotland.gov.uk/socialresearch).

Kumar, S. T., Charan, G.B and Kumar, S. S., 2013, "Review of the research on the fish diversity in the river Mahanadi and identifying the probable potential ornamental fishes among them with reference to threats and conservation measures", *Research Journal of Animal, Veterinary and Fishery Science*, International science congress association, Vol. 1(3), pp.16-24, available from <https://www.isca.in/AVFS/Archive/v1/i3/4.ISCA-RJAVFS-2013>

Mishra, K and Nayak, P. L., 2014, "A study of water pollution in two major rivers in Odisha-Mahanadi and Brahmani", *Middle-East Journal of Scientific Research*, Synergy Institute of Technology, Bhubaneswar, Odisha, India, vol.22 (12), pp.1760-1770, viewed 20 November 2015, Available from DOI: 10.5829/idosi.mejsr.2014.22.12.21634.

Panigariya, A., 2013, "Poverty by social, religious and economic groups in india and its largest states 1993-94 to 2011-12", *Institute for Social and Economic Research and Policy, Columbia University*, Working Paper No. 2013-02, pp.1-46, viewed 17 December 2015, Available from <http://doi.org/10.7916/D8QC0C2S>.

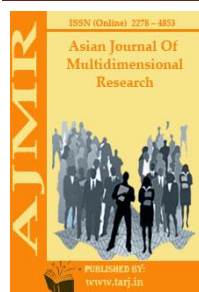
Ramakrishna, R., Shipton, T. A., and Hasan, M. R., 2013, "Feeding and feed management of Indian major carps in Andhra Pradesh, India", *Food and agriculture organization of the United Nations*, Rome, FAO Fisheries and Aquaculture Technical Paper No. 578. Pp.1-90, Available from <http://www.fao.org/docrep/019/i3146e/i3146e.pdf>.

Thorat, S and Lee, J., 2005, "Food security scheme and caste discrimination", *Economic and Political Weekly*, Vol.40, Issue No.39, pp.4198-4201 Viewed 3 July 2015, Available from <http://www.epw.org>

Thorat, A., 2010, "Ethnicity, caste and religion: implications for poverty outcomes", *Economic and Political Weekly*, Vol. 45, Issue No.51, pp.47-53, Viewed 7 September 2015, from <http://www/re.indiaenviro>, available from [nmentportal.org.in/files/](http://nmentportal.org.in/files/)

Ulman, Y. N., Naik, V. GandTalathi, J. M., 2008, "Traditional fishing practice and socio-cultural activities of koli community in konkan region of India", *Asian Agri-History*, Vol.4, pp.311-319, viewed 8 december,2015, available from <http://www.reaerchgate.net/> traditional fishing practice.

World Bank.,2011, "Poverty and social exclusion in India", *Oxford University Press*, Viewed 10 June 2015, pp.1-192, available from DOI: 10.1596/978-0-8213-8690-3 <https://elibrary.worldbank.org/doi/pdf/10.1596/978-0-8213-8690-3>.



## DIETARY INTAKE AND NUTRITIONAL STATUS OF TRIBALS IN ODISHA

Dr. Siba Prasad Pothal\*; Dr. Bijaya Kumar Panda\*\*

\*Senior Lecturer in Economics,  
TMSS Women's Degree College,  
Hyderabad, Telangana State, INDIA.  
Email id: siba.pothal@gmail.com

\*\*Former Professor and Head,  
P.G. Department of Economics,  
Berhampur University,  
Berhampur, Odisha, INDIA.  
Email id: bkpandabu@gmail.com

### ABSTRACT

*The present study examines the dietary intake and the nutritional status of the tribals (Scheduled Tribes) in Odisha by using dietary and nutrient intake, and anthropometric methods. Using secondary data collected from sources like National Family Health Survey reports, Sample Registration System (SRS) Bulletins, Repeated Survey on Diet and Nutrition conducted by National Nutrition Monitoring Bureau (NNMB), National Sample Survey (NSS) reports, etc., the study attempts to assess the level and the degree of malnutrition among the tribals in general and tribal women and children in particular. The study reveals that (i) the tribals of the state have a long history of chronic hunger, food insecurity and unhygienic living conditions, all of which have a direct bearing on their quality of life and wellbeing, (ii) there exist significant regional and gender disparities in the dietary intake and the nutritional status of the tribals in the state, and (iii) tribal infants, pre-school children, and pregnant and lactating women are the most vulnerable to malnourishment and malnutrition.*

**KEYWORDS:** Dietary Intake, Nutrition, Odisha, Quality Of Life, Tribals, Wellbeing.

## 1. INTRODUCTION

Nutrition is a prerequisite for good health and wellbeing of any section of the population. It is concerned with social, economic, cultural and psychological implications of their food consumption pattern. It is directly linked to the human resource development, productivity and prosperity of a nation (Radhakrishna and Ravi, 2004; Baraik and Kulkarni, 2006). However, recent studies indicate that malnutrition<sup>1</sup> is one of the most serious and persistent problems in India and is a negation to social development. Despite the recent achievement in economic progress in the country, the fruits of development have failed to secure a better nutritional status for different sections of the population. The anthropometric indicators of nutrition in the country, for both adults and children, are among the worst in the world (Deaton and Drèze, 2009). The eastern Indian state of Odisha (formerly known as Orissa) is a case in point, where chronic hunger and malnutrition have remained major health issues over the years. According to the India State Hunger Index (2009), Odisha suffers from 'alarming' level of hunger. While nutrition outcomes across the state are poor, these are typically worse in the tribal-dominated areas of the state. High level of food insecurity is visible in the form of starvation deaths, higher mortality rate and undernutrition, especially among the tribals (Scheduled Tribes or STs) of Odisha's southern NSS region<sup>2</sup> which includes the chronically backward KBK (Kalahandi-Balangir-Koraput)<sup>3</sup> districts.

Odisha has occupied an important place in the tribal map of India for having various culturally-unique ethnic groups from time immemorial. The tribal population of this state, as per the Census of India 2011, is 9.59 million, constituting nearly 22.85 per cent of the total state population and 9.2 per cent of the total tribal population of the country. In the hierarchy of distribution of tribal population, the state comes third in position in India, the first two being Madhya Pradesh with 14.69 per cent and Maharashtra with 10.08 per cent. The tribal communities living in different parts of Odisha present a widely acknowledged multifarious socio-economic system. They are located at varied stages of socio-cultural orientation and economic development, with different degrees of exposure to modernity and social change.

Most of the tribals in Odisha do not have physical and economic access to adequate nutritious food all the time. Malnutrition among them is frequently part of a vicious cycle which includes acute poverty and disease. Poverty leads to malnutrition and resultant diseases and morbidity, which are common in the tribal dominated areas of the state. The improvement of nutrition levels of the tribal communities appears to be very slow relative to what might be expected in the light of the considerable progress made by the state in the recent past. A large number of tribals in the state fail to consume adequate energy, protein and micronutrients, which in turn leads to nutrition related problems characterized by stunting, wasting, underweight, undernutrition of children, low birth weight, lower body size of adults, anemia, and iron, Vitamin A and B deficiency. Tribal women and children are deprived in several important aspects of health and nutrition. Moreover, the nutritional status of the tribals in Odisha is worse than their rural counterparts.

## 2. OBJECTIVES OF THE STUDY

The specific objectives of the present study are:

- i) To examine the level and the degree of malnutrition among the tribals of Odisha by using dietary and nutrient intake methods.
- ii) To analyse various anthropometric indices for assessing the nutritional status of the tribals in general and tribal women and children in particular.

- iii) To assess inter-regional and inter-social group variations in nutrient intake in Odisha.
- iv) To examine the impact of severity of poverty on the nutritional status of the tribals.

### 3. METHODOLOGY OF THE STUDY

The present study is based on secondary data collected from the various sources including the unit record data of the household consumer expenditure survey (CES) conducted by the National Sample Survey Office (NSSO) during its 66<sup>th</sup> quinquennial round, 2009-10; Population Census reports; National Family Health Survey (NFHS) reports; Sample Registration System (SRS) Bulletins, the reports of Repeated Survey on Diet and Nutrition conducted by the National Nutrition Monitoring Bureau (NNMB) and other reports. The study also uses data from the literatures, scholarly published research studies, and other published and unpublished secondary sources of data. The NSS data includes household consumption of quantities and expenditure of various food items with their other socio-economic characteristics. Further, it is also based on validated mixed recall period (30 days and 365 days) unit record consumer expenditure data collected from 2,975 rural households and 1,055 urban households spreading over 372 sample villages and 132 sample blocks, respectively, of all the districts/stratums of Odisha during its 66<sup>th</sup> round, 2009-10, the eighth quinquennial survey of the NSSO.<sup>4</sup>

Nutritional status of a population can be interpreted through direct and indirect methods. It can be directly interpreted using Anthropometric, Biochemical (laboratory testing), Clinical and Dietary intake data (summarized as ABCD methods). In addition, it can also be assessed indirectly using some ecological variables like agricultural production; economic factors like poverty and income level; and health indices like infant mortality rate, fertility index, etc. In the present study, we have used the dietary, nutrient intake and anthropometric measures to examine the nutritional status of the tribals in Odisha.

### 4. FOOD AND DIETARY INTAKE OF TRIBALS

We need sufficient food for growth and development (Gopalan *et al.*, 1996). Many field-level studies on the consumption pattern of the tribal households have reported that the daily food intake of tribals is very poor in quality, ill-balanced and fails to supply the necessary nutrients. In this section, we have examined the dietary intake of the tribals by analysing the data collected by the NNMB in the Integrated Tribal Development Agency (ITDA) areas of Odisha during 2007-08. An attempt has also been made in this section to show the time trend in the average consumption of foodstuffs (gm/day) by the tribals by age groups and gender.

An analysis of the NNMB data depicts that the food intake of both tribal adults and children in Odisha falls much below the recommended dietary intake (RDI) laid down by the Indian Council of Medical Research (ICMR), especially involving deficiencies in proteins and other micronutrients. The average intakes of most of the foodstuffs are much below the RDI. It is observed from **Table 1** that the mean intake of cereals and millets for all the age groups decreased during the period from 1998-99 to 2007-08. Similar declining trend is also observed in the consumption of other vegetables while the consumption of pulses and legumes increased marginally during this period. Though the consumption of protective foods, such as milk and milk products, green leafy vegetables, fruits, etc., has increased marginally over the years, the consumption levels are significantly deficient compared to the recommended levels. Milk and milk products are very important for development of children. But the average consumption of milk and milk products is significantly lower when compared to the suggested intake levels. The intake of all the other food items remained more or less unchanged during this period. It is also



marked that there is either no change or a marginal decrease in the mean intake of some food items by different age and sex groups of tribal population.

**TABLE 1: MEAN INTAKE OF FOODSTUFFS (GM/DAY) BY ST HOUSEHOLDS IN ODISHA**

| Age Group         | Year    | S Us | Cereals and Millets | Pulses and its products | Green Leafy Vegetables | Other Vegetables | Roots and Tubers | Fruits | Flesh Foods | Milk and its Products | Sugar and Jaggery |
|-------------------|---------|------|---------------------|-------------------------|------------------------|------------------|------------------|--------|-------------|-----------------------|-------------------|
| (1)               | (2)     | (3)  | (4)                 | (5)                     | (6)                    | (7)              | (8)              | (9)    | (10)        | (11)                  | (12)              |
| 1-3 yrs. children | 1998-99 | 360  | 178                 | 13                      | 48                     | 26               | 16               | 22     | 3           | 0                     | 3                 |
|                   | 2007-08 | 391  | 157                 | 12                      | 31                     | 20               | 21               | 7      | 5           | 3                     | 2                 |
| RDI               | 1990    | -    | 175                 | 35                      | 40                     | 20               | 10               | -      | -           | 300                   | 30                |
| 4-6 yrs. children | 1998-99 | 312  | 238                 | 13                      | 69                     | 40               | 19               | 17     | 3           | 1                     | 2                 |
|                   | 2007-08 | 393  | 232                 | 16                      | 40                     | 29               | 27               | 11     | 6           | 1                     | 2                 |
| RDI               | 1990    | -    | 270                 | 35                      | 50                     | 30               | 20               | -      | -           | 250                   | 40                |
| 7-9 yrs. children | 1998-99 | 371  | 300                 | 12                      | 77                     | 40               | 21               | 25     | 4           | 1                     | 2                 |
|                   | 2007-08 | 431  | 307                 | 15                      | 49                     | 34               | 29               | 11     | 7           | 0                     | 1                 |
| RDI               | 1990    | -    | 420                 | 45                      | 50                     | 50               | 30               | -      | -           | 250                   | -                 |
| 10-12 yrs. Boys   | 1998-99 | 175  | 337                 | 13                      | 87                     | 31               | 17               | 46     | 6           | -                     | 1                 |
|                   | 2007-08 | 209  | 364                 | 17                      | 59                     | 37               | 28               | 11     | 10          | *                     | 1                 |
| RDI               | 1990    | -    | 420                 | 45                      | 50                     | 50               | 30               | -      | -           | 250                   | 45                |
| 10-12 yrs. Girls  | 1998-99 | 167  | 349                 | 13                      | 85                     | 39               | 28               | 23     | 5           | -                     | 2                 |
|                   | 2007-08 | 182  | 356                 | 17                      | 56                     | 33               | 33               | 13     | 8           | *                     | 2                 |
| RDI               | 1990    | -    | 380                 | 45                      | 50                     | 50               | 30               | -      | -           | 250                   | 45                |
| 13-15 yrs. Boys   | 1998-99 | 123  | 433                 | 12                      | 106                    | 41               | 26               | 40     | 11          | -                     | 2                 |
|                   | 2007-08 | 159  | 423                 | 17                      | 62                     | 36               | 38               | 20     | 8           | *                     | 1                 |
| RDI               | 1990    | -    | -                   | -                       | -                      | -                | -                | -      | -           | -                     | -                 |
| 13-15 yrs. Girls  | 1998-99 | 130  | 421                 | 13                      | 71                     | 44               | 33               | 13     | 5           | 1                     | 3                 |
|                   | 2007-08 | 171  | 424                 | 16                      | 62                     | 37               | 41               | 13     | 11          | *                     | 2                 |
| RDI               | 1990    | -    | -                   | -                       | -                      | -                | -                | -      | -           | -                     | -                 |

|                       |         |     |     |    |     |    |    |    |    |     |    |
|-----------------------|---------|-----|-----|----|-----|----|----|----|----|-----|----|
| 16 yrs. & above Men   | 1998-99 | 237 | 593 | 19 | 86  | 54 | 64 | 31 | 10 | 2   | 3  |
|                       | 2007-08 | 273 | 500 | 23 | 59  | 52 | 54 | 17 | 13 | 1   | 3  |
| RDI                   | 1990    | -   | 460 | 40 | 40  | 60 | 50 | -  | -  | 150 | 30 |
| 16 yrs. & above Women | 1998-99 | 137 | 536 | 18 | 92  | 46 | 42 | 18 | 8  | 1   | 2  |
|                       | 2007-08 | 688 | 457 | 21 | 59  | 46 | 45 | 18 | 10 | 1   | 3  |
| RDI                   | 1990    | -   | 410 | 40 | 100 | 60 | 50 | -  | -  | 100 | 20 |

Source: National Nutrition Monitoring Bureau, ICMR, 2009.

Note: RDI denotes Recommended Dietary Intake; SUs are the sample units; \* less than 1gm.

## 5. NUTRIENT INTAKE OF TRIBALS

Like the food and dietary intake, the NNMB data clearly indicates that the overall nutrient intake of the tribals in the state did not improve significantly over the period of time from 1998-99 to 2007-08. Moreover, the intake of most of the nutrients is below the recommended levels. It is observed from **Table 2** that the mean intake of nutrients such as protein, energy, iron and free folic acid was declined among different tribal age groups during the above period.

The intakes of the nutrients like calcium, Vitamin-A, thiamin, niacin and Vitamin-C was increased among the tribal children in the age group of 1-3 years during this period. However, except Vitamin-C and free Folic Acid, the intake of almost all the nutrients by the tribal children of this age group remained much lower than the recommended nutrient intake levels. Similarly, the average intake of most of the nutrients such as protein, energy, iron and riboflavin remained lower than the recommended levels among the tribal children in the age group of 4-6 years. However, the intakes of micronutrients such as Vitamin-A and Vitamin-C were marginally more than the recommended levels for this age group of tribal population.

**TABLE 2: AVERAGE PER CAPITA PER DAY INTAKE OF NUTRIENTS BY ST HOUSEHOLDS IN ODISHA**

| Age Group         | Year    | SUs | Protein (g) | Energy (Kcal) | Calcium (mg) | Iron (mg) | Vit. A (µg) | Thiamin (mg) | Riboflavin (mg) | Niacin (mg) | Vit.C (mg) | Free Folic Acid (µg) |
|-------------------|---------|-----|-------------|---------------|--------------|-----------|-------------|--------------|-----------------|-------------|------------|----------------------|
| (1)               | (2)     | (3) | (4)         | (5)           | (6)          | (7)       | (8)         | (9)          | (10)            | (11)        | (12)       | (13)                 |
| 1-3 yrs. children | 1998-99 | 360 | 20.6        | 787           | 243          | 7.0       | 562         | 0.4          | 0.4             | 4.9         | 45         | 32.0                 |
|                   | 2007-08 | 391 | 16.8        | 682           | 200          | 4.9       | 378         | 0.4          | 0.2             | 6.2         | 44         | 21.0                 |
| RDA               | 1990    | -   | 22.0        | 1240          | 500          | 12.0      | 400         | 0.6          | 0.7             | 8.0         | 30         | -                    |
| 4-6 yrs. children | 1998-99 | 312 | 25.5        | 1010          | 323          | 8.7       | 693         | 0.5          | 0.5             | 6.1         | 62         | 42.8                 |
|                   | 2007-08 | 39  | 23.8        | 979           | 270          | 7.1       | 465         | 0.6          | 0.3             | 9.0         | 53         | 29.2                 |

|                                 |             |         |      |          |     |          |          |     |     |          |    |      |
|---------------------------------|-------------|---------|------|----------|-----|----------|----------|-----|-----|----------|----|------|
| en                              | 08          | 3       |      |          |     |          |          |     |     |          |    |      |
| RDA                             | 1990        | -       | 30.0 | 169<br>0 | 400 | 18.<br>0 | 400      | 0.9 | 1.0 | 11.<br>0 | 40 | -    |
| 7-9<br>yrs.<br>childr<br>en     | 1998-<br>99 | 37<br>1 | 29.1 | 121<br>7 | 353 | 9.5      | 813      | 0.5 | 0.6 | 7.3      | 69 | 47.0 |
|                                 | 2007-<br>08 | 43<br>1 | 29.1 | 124<br>4 | 319 | 8.2      | 593      | 0.8 | 0.3 | 11.<br>6 | 67 | 36.0 |
| RDA                             | 1990        | -       | 41.0 | 195<br>0 | 400 | 26.<br>0 | 600      | 1.0 | 1.2 | 13.<br>0 | 40 | -    |
| 10-12<br>yrs.<br>Boys           | 1998-<br>99 | 17<br>5 | 32.3 | 136<br>3 | 367 | 10.<br>4 | 105<br>5 | 0.6 | 0.7 | 8.4      | 76 | 50.0 |
|                                 | 2007-<br>08 | 20<br>9 | 34.0 | 145<br>6 | 379 | 10.<br>0 | 688      | 0.9 | 0.4 | 13.<br>3 | 74 | 42.3 |
| RDA                             | 1990        | -       | 54.0 | 219<br>0 | 600 | 34.<br>0 | 600      | 1.1 | 1.3 | 15.<br>0 | 40 | -    |
| 10-12<br>yrs.<br>Girls          | 1998-<br>99 | 16<br>7 | 33.2 | 140<br>6 | 396 | 10.<br>5 | 877      | 0.6 | 0.7 | 8.4      | 74 | 52.0 |
|                                 | 2007-<br>08 | 18<br>2 | 34.0 | 143<br>5 | 371 | 9.4      | 683      | 0.9 | 0.4 | 13.<br>3 | 76 | 41.2 |
| RDA                             | 1990        | -       | 57.0 | 197<br>0 | 600 | 31.<br>0 | 600      | 1.0 | 1.2 | 13.<br>0 | 40 | -    |
| 13-15<br>yrs.<br>Boys           | 1998-<br>99 | 12<br>3 | 41.0 | 171<br>8 | 481 | 12.<br>7 | 156<br>0 | 0.7 | 0.8 | 10.<br>6 | 91 | 62.0 |
|                                 | 2007-<br>08 | 15<br>9 | 38.2 | 168<br>1 | 391 | 9.8      | 798      | 1.0 | 0.4 | 15.<br>8 | 91 | 49.3 |
| RDA                             | 1990        | -       | 70.0 | 245<br>0 | 600 | 41.<br>0 | 600      | 1.2 | 1.5 | 16.<br>0 | 40 | -    |
| 13-15<br>yrs.<br>Girls          | 1998-<br>99 | 13<br>0 | 37.6 | 164<br>9 | 395 | 10.<br>9 | 684      | 0.7 | 0.7 | 9.6      | 66 | 51.0 |
|                                 | 2007-<br>08 | 17<br>1 | 38.8 | 169<br>0 | 411 | 9.2      | 776      | 1.0 | 0.4 | 15.<br>8 | 93 | 49.0 |
| RDA                             | 1990        | -       | 65.0 | 206<br>0 | 600 | 28.<br>0 | 600      | 1.0 | 1.2 | 14.<br>0 | 40 | -    |
| 16<br>yrs.<br>&<br>above<br>Men | 1998-<br>99 | 23<br>7 | 54.3 | 237<br>9 | 491 | 14.<br>9 | 938      | 1.0 | 1.0 | 14.<br>4 | 87 | 69.0 |
|                                 | 2007-<br>08 | 27<br>3 | 47.1 | 202<br>9 | 420 | 12.<br>1 | 723      | 1.2 | 0.5 | 19.<br>3 | 88 | 56.0 |
| RDA                             | 1990        | -       | 60.0 | 242<br>5 | 400 | 28.<br>0 | 600      | 1.2 | 1.4 | 16.<br>0 | 40 | -    |
| 16<br>yrs.&<br>above<br>Women   | 1998-<br>99 | 13<br>7 | 49.0 | 212<br>0 | 483 | 13.<br>5 | 906      | 0.9 | 0.9 | 12.<br>5 | 83 | 66.0 |
|                                 | 2007-<br>08 | 68<br>8 | 42.5 | 1839     | 402 | 10.9     | 678      | 1.1 | 0.5 | 17.2     | 90 | 58.0 |
| RDA                             | 1990        | -       | 50.0 | 1875     | 400 | 30.0     | 600      | 0.9 | 1.1 | 12.0     | 40 | -    |

Source: National Nutrition Monitoring Bureau, ICMR, 2009.

Note: RDA denotes Recommended Dietary Allowance; SUs are the sample units.

**Table 2** also indicates that, for tribal boys and girls in the age group of 10-12 years, the mean intake of energy and protein was increased by 93 Kcal and 29 Kcal, respectively. However, the mean intake of nutrients such as protein, energy, iron, calcium and thiamin remained lower than the RDA for both boys and girls of this age group from 1985-87 to 2007-08. The average daily intake of the nutrients such as protein, energy, calcium and Vitamin-A was declined by 7.2g, 350 Kcal, 71mg and 215µg, respectively, for the ST men of 16 years and above. The same declining trend was also observed for the ST women of 16 years and above. The mean intake of nutrients, except calcium, Vitamin-A, thiamin, niacin and Vitamin-C, remained less than the RDA for the ST women during 2007-08.

### 5.1 INTER-REGIONAL VARIATION IN NUTRIENT INTAKE OF TRIBALS

The NSSO divides Odisha into three distinct regions, viz., Coastal, Southern and Northern. The Coastal region consists of nine agriculturally prosperous districts. The Southern region constitutes 12 relatively backward tribal-dominated districts and the Northern region constitutes nine districts with rich in natural resources. In this study nutrient intake is examined according to the three NSS regions in order to assess the regional disparities in nutritional intake. Here, we have analysed the NSSO's 66<sup>th</sup> round of consumer expenditure survey unit record data collected during 2009-10 and the important nutrients considered in this section are energy (calories), proteins and fats. Calories are needed for the functioning of the human body; proteins help develop the body; and fats are the constant sources of energy for the body. We have converted the quantities of food items consumed to nutrients by multiplying them with the respective nutrition coefficients which are obtained from the nutritive values of different food items. Based on our calculations (the coefficient of variation of calories intake per consumer unit, standard deviation, etc.), we took 2,220 Kcal per capita per day as the cut-off point and it was used for the estimation of energy deficiency among people in different regions, given the mean daily requirement of energy per capita per day of 2,400 Kcal (for rural areas). Other cut-off points have been taken as 20 grams of fats per day and 60 grams of proteins per day. Based on our analysis, we found that the average intake of calories, proteins and fats per capita per day was the highest in the Northern region and the lowest in the tribal-dominated Southern region of Odisha (**Table 3**). It is also observed that the proportion of the population deficient in calories is higher as compared to the other two nutrients.

**TABLE 3: REGION-WISE INTAKE OF NUTRIENTS AND PERCENTAGE OF POPULATION DEFICIENT IN NUTRIENT INTAKE IN ODISHA**

| Region   | Total nutrient intake/ consumer unit per day |          |      | Percentage of population deficient in |          |      |
|----------|--|----------|------|---------------------------------------|----------|------|
|          | Calories                                     | Proteins | Fats | Calories                              | Proteins | Fats |
| Coastal  | 2286   | 66       | 40   | 35                                    | 32       | 24   |
| Northern | 2345   | 72       | 47   | 38                                    | 36       | 27   |
| Southern | 2192   | 58       | 38   | 46                                    | 44       | 32   |
| Odisha   | 2276   | 65       | 42   | 40                                    | 38       | 27   |

Source: Unit Record Data of 66<sup>th</sup> Round of NSSO Consumer Expenditure Survey (CES), 2009-10.

## 6. ANTHROPOMETRIC ASSESSMENT OF NUTRITIONAL STATUS

In Anthropometric measurements, the measures like age, weight and height of an individual are generally used to construct indices for malnutrition. The body mass index (BMI), i.e. the ratio of weight (in kilograms) to the square of height (in square meters), is a commonly used anthropometric measure of malnutrition among adults  $\geq 18$  years (Lohman *et al.*, 1988). The BMI is consistently and highly correlated with body weight and is relatively independent of the height of the adult. A cut-off point of BMI below  $18.5 \text{ kg/m}^2$  is used to define thinness or acute undernutrition and a BMI of  $25 \text{ kg/m}^2$  or above indicates overweight or obesity. Chronic energy deficiency (CED) is generally indicated by a BMI of less than  $18.5 \text{ kg/m}^2$ . CED tends to indicate the absence of freedom to lead a minimally healthy life, and hence it is structurally different from overweight and obesity, which also relates to, inter alia, an unhealthy and affluent lifestyle. Iron deficiency anaemia, one of the most widespread forms of women's malnutrition in developing countries, is usually measured by 11.9 gm/decilitre of haemoglobin in the blood. Haemoglobin level below 9.0 and 7.0 gm/decilitre denotes moderate and severe anaemia, respectively. For children, instead of the BMI, weights and heights are compared to the specified standards.

The NFHS-3 collected information on height and BMI of adult men aged 15-54 and adult women aged 15-49. The cutoff point for height is usually taken in the range of 140-150 centimeters (cm). Below this cutoff point a woman is identified as nutritionally at risk. The NFHS-3 followed a cutoff point of 145 cm. The mean BMI is almost similar for ST men (19.3) and women (19.1) aged 15-49. Based on the NFHS-3 data, it is found that, at the all-India level, about 46.6 per cent of women aged 15-49 are thin compared with about 41.3 per cent of men. The patterns of thinness for ST men are almost similar to the patterns for tribal women. According to the NFHS-3 findings, the tribals have poorer nutrition outcomes compared to all other social groups and also all-India average, which is shown in **Table 4**.

**TABLE 4: POORER NUTRITION OUTCOMES FOR STS COMPARED TO SCS AND OBCS**

| Social Classes/India | Nutrition Outcomes |             |         |
|----------------------|--------------------|-------------|---------|
|                      | Stunting           | Underweight | Wasting |
| (1)                  | (2)                | (3)         | (4)     |
| ST                   | 53.9               | 54.5        | 27.6    |
| SC                   | 53.9               | 47.9        | 21      |
| OBC                  | 48.8               | 48.2        | 20      |
| Other                | 40.7               | 38.7        | 16.3    |
| India                | 48                 | 42.5        | 19.8    |

Note: All numbers are in per cent.

Source: NFHS-3 (2005-06), IIPS.

### 6.1 ANTHROPOMETRIC INDICES TO ASSESS NUTRITIONAL STATUS OF ST WOMEN

The nutritional status of women and children is a robust indicator of social well-being. The nutritional status of a woman has important implications for her health as well as the health of her children. Female malnutrition among the SCs and the STs in the country is higher than the national average and it is even worse amongst both these social groups in the low per capita

income states (India Human Development Report, 2011). For example, more than 50 per cent of the SC and the ST women are malnourished in economically and educationally backward states like Bihar and Odisha (NFHS-3). In Odisha, female malnutrition has decreased over the period of time. However, malnutrition among women in the state is significantly higher than the national average of 36 per cent for both the SCs (51 per cent) and STs (51.6 per cent) in 2005-06.

A substantially higher proportion of tribal women are found to be underweight with BMI <18.5 kg/m<sup>2</sup>. The NFHS-3 shows that about 41.4 per cent of women in Odisha have a body mass index (BMI) below 18.5, indicating a high prevalence of nutritional deficiency. About 62 per cent women suffer from anaemia against the national average of 55.3 per cent. The incidence of anaemia among tribal women is also high compared to their counterparts in other social groups. As per the NFHS-3, about 44.8 per cent of tribal women are mildly anaemic; 21.3 per cent are moderately anaemic; and 2.4 per cent are severely anaemic at the national level.

According to the NNMB survey in the ITDA areas of Odisha, the prevalence of chronic energy deficiency (BMI below 18.5 kg/m<sup>2</sup>) was about 52.3 per cent and 38.6 per cent among the adult ST women and men, respectively (**Table 5**). The percentage of men with a BMI below 18.5 kg/m<sup>2</sup> decreased by five percentage points during the period from 1998-99 to 2007-08 whereas it increased marginally in case of the ST women during the same time period.

**TABLE 5: PERCENTAGE DISTRIBUTION OF ST MEN AND WOMEN (≥ 18 YEARS) IN ODISHA ACCORDING TO BMI CLASSIFICATION**

| Gender | Period  | SUs   | BMI Grades                        |                  |                    |
|--------|---------|-------|-----------------------------------|------------------|--------------------|
|        |         |       | Chronic Energy Deficient (< 18.5) | Normal (18.5-23) | Over Weight (≥ 23) |
| (1)    | (2)     | (3)   | (4)                               | (5)              | (6)                |
| Men    | 1998-99 | 3,337 | 43.6                              | 54.4             | 2.0                |
|        | 2007-08 | 3,708 | 38.6                              | 58.0             | 3.4                |
| Women  | 1998-99 | 4,132 | 51.5                              | 46.7             | 1.8                |
|        | 2007-08 | 4,975 | 52.3                              | 44.1             | 3.6                |

Source: National Nutrition Monitoring Bureau, ICMR, 2009.

Note: SUs denote sample units.

High prevalence of nutritional deficiency and CED are observed among the ST women, indicating nutritional problem being more serious for this section of the tribal population. The Indian Council of Medical Research (ICMR, 2003) examined the chronic energy deficiencies faced by the tribes of Odisha and found that the CED of 38.6 per cent in case of STs is slightly higher than the aggregate CED figure of Odisha (37.4 per cent). Similarly, the CED figure for ST women was 46 per cent, which is comparatively much higher than the overall CED figure of 39.3 per cent for women in the state.

## 6.2 NUTRITIONAL STATUS OF TRIBAL CHILDREN

The level of child malnutrition in the scheduled areas of Odisha is very much alarming. High infant mortality and under-5 mortality in such areas reflects large concentration of child malnutrition. Malnutrition among the tribal children begins from the mother's womb and becomes acute because of improper childcare and feeding practices, lack of nutritious food, inadequate access to primary healthcare, poor sanitation, degraded environment, etc. The magnitude of undernutrition is significantly high among pre-school children in ITDA areas of the



state (NNMB, 2009). According to the Orissa Human Development Report (2004), a strong correlation (0.71) is established between child malnutrition and child mortality whereas the correlation between child malnutrition and poverty is rather weak at 0.38.

Micronutrient deficiency is a major cause of childhood morbidity and mortality in tribal areas. High prevalence of wasting among the ST children is of particular concern. The NFHS-3 recorded the highest percentage of underweight and stunted children for the ST category at 54.5 per cent and 53.9 per cent, respectively followed by the SC category at 47.9 per cent and 53.9 per cent, respectively at the national level. About 76.8 per cent of the ST children were recorded to be anemic including 26.3 per cent who are mildly anemic, 47.2 per cent are moderately anemic and above 3.3 per cent are severely anemic (**Table 6**). About 57.2 per cent of the tribal children in Odisha suffer from long-term malnutrition or stunting or deficit in height-for-age), about 28.4 per cent from severe stunting and about 54.4 per cent show signs of being underweight.

**TABLE 6: PREVALENCE OF ANEMIA IN CHILDREN AGED 6-59 MONTHS**

| Social Groups | Anemia Status by Hemoglobin Level |                              |                       |                            |
|---------------|-----------------------------------|------------------------------|-----------------------|----------------------------|
|               | Mild<br>(10.0 - 10.9 g/dl)        | Moderate<br>(7.0 - 9.9 g/dl) | Severe<br>(<7.0 g/dl) | Any anemia<br>(<11.0 g/dl) |
| (1)           | (2)                               | (3)                          | (4)                   | (4)                        |
| ST            | 26.3                              | 47.2                         | 3.3                   | 76.8                       |
| SC            | 24.9                              | 43.7                         | 3.6                   | 72.2                       |
| OBC           | 26.7                              | 40.5                         | 3.0                   | 70.3                       |
| Others        | 26.9                              | 34.8                         | 2.1                   | 63.8                       |
| Total         | 26.3                              | 40.2                         | 2.9                   | 69.5                       |

Note: All figures are in percentage.

Source: NFHS-3, IIPS

## 7. CHRONIC POVERTY AND NUTRITIONAL STATUS OF TRIBALS

The consumption of a wide variety of nutritious foods is important for an individual's health. But a vast majority of the tribals in Odisha has limited choice to expand their food basket, mainly due to chronic poverty. According to the World Health Organisation, malnutrition is part of a vicious cycle which includes poverty and disease. Each of these three factors, viz., malnutrition, poverty and disease contributes to the presence and performance of the others.

Generally, tribals are confronted with higher levels of poverty and low levels of income which translate to lower level food security. Chronic poverty is disproportionately high among the SC and the ST communities in Odisha, indicating wide disparities in the incidence, depth and severity of poverty among these social groups in the state. The multiple deprivations suffered by these marginalized sections make it harder for them get away from the poverty trap. The tribal communities are poorer than other social groups and are at the bottom on various indicators of development, including consumption and poverty (de Haan and Dubey, 2005). Most of the tribals in Odisha are generally stricken with absolute poverty. Poverty is extremely high in the southern part of the state where concentration of tribal population is high. This indicates that the deprivation of tribals may be caused by their location also.

According to the estimates on the basis of the Tendulkar Committee methodology<sup>5</sup>, poverty in Odisha has declined by 26.51 percentage points from 59.10 per cent in 1993-94 (50<sup>th</sup> round of NSS) to 32.59 per cent in 2011-12 (68<sup>th</sup> round of NSS). Poverty also declined in all NSS regions

and for all social classes of the state including STs, SCs, OBCs and others during this period. However, the extent of poverty in Southern and Northern regions as well as among the STs and the SCs is still high and remains a matter of serious concern (**Table 7**).

**TABLE 7: POVERTY IN ODISHA AND INDIA \* (HEAD COUNT RATIO, IN PER CENT TERMS)**

| Year    | NSS Round        | Reference Period | Odisha |       |       | All India |       |       |
|---------|------------------|------------------|--------|-------|-------|-----------|-------|-------|
|         |                  |                  | Rural  | Urban | Total | Rural     | Urban | Total |
| (1)     | (2)              | (3)              | (4)    | (5)   | (6)   | (7)       | (8)   | (9)   |
| 1993-94 | 50 <sup>th</sup> | MRP              | 63.00  | 34.50 | 59.10 | 50.10     | 30.80 | 45.30 |
| 2004-05 | 61 <sup>st</sup> | MRP              | 60.80  | 37.60 | 57.20 | 41.80     | 25.70 | 37.20 |
| 2009-10 | 66 <sup>th</sup> | MRP              | 39.20  | 25.90 | 37.00 | 33.80     | 20.90 | 29.80 |
| 2011-12 | 68 <sup>th</sup> | MRP              | 35.69  | 17.29 | 32.59 | 25.70     | 13.70 | 21.92 |

Note: MRP denotes Mixed Recall Period. \*Based on Tendulkar Committee methodology.

Source: Directorate of Economics and Statistics, Govt. of Odisha.

The figures in **Table 8** reveal that the incidence of poverty is much higher among the ST and the SC households as compared to the OBC and the FC (Forward Caste) households in Odisha. The incidence of poverty is the highest (63.52 per cent) for the ST households followed by the SC households (41.39 per cent) and the OBC households (24.16 per cent) in rural Odisha during 2011-12. Moreover, the incidence of poverty for the ST households is much higher than the overall incidence of poverty in the state (35.69 per cent) during the above period.

**TABLE 8: SOCIAL CLASS POVERTY IN RURAL ODISHA \* (HEAD COUNT RATIO, IN PER CENT TERMS)**

| Year    | NSS Round        | ST    | SC    | OBC   | FC    | Total |
|---------|------------------|-------|-------|-------|-------|-------|
| (1)     | (2)              | (3)   | (4)   | (5)   | (6)   | (7)   |
| 2004-05 | 61 <sup>st</sup> | 84.40 | 67.90 | 52.70 | 37.10 | 60.80 |
| 2009-10 | 66 <sup>th</sup> | 66.00 | 47.10 | 25.60 | 24.50 | 39.20 |
| 2011-12 | 68 <sup>th</sup> | 63.52 | 41.39 | 24.16 | 14.20 | 35.69 |

\*Based on Tendulkar Committee methodology.

Source: Directorate of Economics and Statistics, Govt. of Odisha.

The ongoing poverty alleviation and other development programmes by the state government have little impact on the improvement of the level of living of the tribals in the state. As a result, tribal households are unable to access adequate quantity of nutritious food. Acute poverty has a strong negative effect on the consumption of safe and nutritious food items by the tribal people. The NSSO 66<sup>th</sup> round survey clearly indicates a significant difference in food expenditure between the tribal and non-tribal communities. Such inequality in the regular consumption expenditure is most prominent for consumption items like milk, eggs, meat and fish with less intense differentials for staple food items.

## 8. CONCLUSION AND RECOMMENDATIONS

The study reveals that food and nutrition intakes are the sensitive dimensions of good health. Despite progress made by the Odisha Government in fighting chronic hunger and food insecurity, undernourishment still affects most of the tribals in the state. Tribal infants, pre-

school children, and pregnant and lactating women are the most vulnerable to malnourishment and malnutrition.

Malnutrition is the tragic culmination of poor socio-economic development. Acute poverty leads to malnutrition causing diseases and morbidity. The crucial factors related to tribal malnutrition are inadequate availability food grains (due to their low production), lack of nutrition knowledge, illiteracy and ignorance, poor consumption habits and lack of diet diversity, unequal distribution of income and food, unemployment, poor sanitation facilities, unhygienic living conditions, unsafe drinking water, poor access to and inadequate availability of health services, poor monitoring of the operational schemes and administrative lapses, etc.

In order to make sustainable and positive changes going forward, it will be critical to support food and nutrition security as a core approach for tribal areas. Given the complex challenge of eradicating hunger and malnutrition, the state machinery should be conscious for the effective implementation of government programmes. In this regard, more concerted efforts are the need of the hour. A broad-based and sustained growth of agriculture along with public intervention in the areas of health care, basic education, nutritional support, public distribution system, etc., would make sustained dent on poverty and food security in a state like Odisha where social indicators especially for STs and SCs are highly unfavourable. Ensuring food security requires action in multiple dimensions, including investments in agriculture in tribal areas, guaranteeing fair access to resources and improving basic education level of the tribals. However, diversification of livelihoods beyond agricultural production is also needed, so that the tribal communities would have the income to buy food for the hungry months. Proper implementation of special healthcare strategies would certainly reduce health and nutritional disparities among the tribal population of the state.

The magnitude of food insecurity and economic deprivation of the tribal communities depicts the failure of the government in several respects to translate constitutionally guaranteed rights and guidelines for policies into development practices. The state government needs to have vigilance on the proper implementations of distribution of rations through the Public Distribution System (PDS) in the tribal areas.

There is a need for coordination between the government and the beneficiaries for success of food security policies. Food security policies must be based on community participation in evolving the policies with proper coordination between the government and the beneficiaries. There is also a need to improve the purchasing power of the tribal communities by generating rural employment and income opportunities. Greater priority must be given on land rights and restoration of alienated lands. In short, more emphasis must be given on the effective and optimal utilization of the developmental inputs and formulation of action plans to meet nutritional needs of the tribes inhabiting different ecosystems in the state.

## NOTES

1. Malnutrition is a broad term that encompasses both over-nutrition as well as under-nutrition. It is usually defined as a chronic condition which is a consequence of over- or under-consumption of any or several essential macro- or micro-nutrients relative to the individual physiological and pathological requirements (Jelliffe, 1966). Four forms of malnutrition can be distinguished: (1) Protein-energy (or protein-calorie) malnutrition, (2) micronutrient malnutrition (i.e., dietary mineral and vitamin deficiencies), (3) secondary malnutrition (i.e., malnutrition primarily caused by illness or disease), and (4) over-nutrition (Mayer, 1976).

Over-nutrition is a chronic condition where intake of food is in excess of dietary energy requirements, resulting in one being overweight and/or experiencing obesity (WHO, 2010). But this paper focuses on the first three forms of malnutrition that lead to a state of under-nutrition which is a substantially larger issue for tribal communities.

2. Odisha is divided into three NSS regions as follows: Coastal region–Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Cuttack, Jajpur, Nayagarh, Khordha and Puri districts; Southern region–Ganjam, Gajapati, Kandhamal, Boudh, Sonepur, Bolangir, Nuapada, Kalahandi, Rayagada, Nabarangpur, Koraput and Malkangiri districts; Northern region–Bargarh, Jharsuguda, Sambalpur, Deogarh, Sundargarh, Kendujhar, Mayurbhanj, Dhenkanal and Angul districts.
3. The old districts of Koraput, Balangir and Kalahandi (KBK districts), which have since 1992-93 been divided into eight districts, are regarded as the most backward and poverty-stricken districts in Odisha. The economic development of such districts through a long term action plan (LTAP) has been a major challenge for the state as well as the central government. The state government has attached high priority to promote balanced regional development in these backward districts.
4. For details see the Report of the NSSO on Nutritional Intake in India, 66<sup>th</sup> Round, Report No. 540, 2012.
5. The Tendulkar Committee revised the methodology for poverty estimation and recommended, among other things, two main departures from the previous methodologies. First, it has enlarged the consumption basket and, thus, increased the poverty lines for both rural and urban areas for which different consumption baskets have been suggested. The proportion of the rural poor estimated by using the poverty lines suggested by this Committee would be higher than those estimated by using the previous methodologies. Second, the Committee recommended the use of the Mixed Recall Period (MRP) methodology over the Uniform Recall Period (URP) methodology for estimation of poverty.

## REFERENCES

- Baraik, V.K. and P.M. Kulkarni (2006): 'Health Status and Access to Healthcare Services - Disparities among Social Groups in India', working paper series, vol.1, No.4, Indian Institute of Dalit Studies, New Delhi.
- Census of India (2011): Office of the Registrar General and Census Commissioner, Government of India, New Delhi.
- De Haan, Arjan and Amaresh Dubey (2005): 'Poverty, Disparities or the Development of Underdevelopment in Orissa', *Economic and Political Weekly*, Vol.40, No.22/23, pp.2321-2329.
- Deaton, Angus and Jean Drèze (2009): 'Food and Nutrition in India: Facts and Interpretations', *Economic and Political Weekly*, Vol.44, No.7, pp.42-65.
- Gopalan, C., B.V. Ramasastri and S.C. Balasubramanian (1996): Nutritive Value of Indian Foods, National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- Government of India (2011): *India Human Development Report 2011: Towards Social Inclusion*, Institute of Applied Manpower Research, New Delhi.
- Government of Odisha (2004): *Human Development Report 2004*, Planning and Coordination Department, Bhubaneswar.

Government of Odisha (2017): *Economic Survey*, Directorate of Economics and Statistics, Planning and Coordination Department, Bhubaneswar.

International Institute of Population Sciences (IIPS) (2006): *National Family Health Survey-3 (2005-06)*, Mumbai.

Jelliffe, D.B. (1966): *The Assessment of the Nutritional Status of the Community*, World Health Organization Monograph, Series No. 53, Geneva.

Lohman, T.G., A.F. Roche and R. Martorell (1988): *Anthropometric Standardization Reference Manual*, Human Kinetics Books, Chicago.

Mayer, J. (1976): 'The dimensions of human hunger', in Scientific American Editors, *Food and Agriculture: A Scientific American Book*, W.H. Freeman and Company, San Francisco.

National Nutrition Monitoring Bureau (NNMB) (2009): *Diet and Nutritional Status of Tribal Population and Prevalence of Hypertension among Adults – Report on Second Repeat Survey*, National Institute of Nutrition (NIN), Hyderabad.

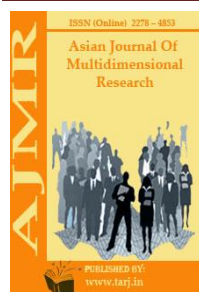
National Sample Survey Office (2011): *Level and Pattern of Consumer Expenditure: 2009-2010 (66<sup>th</sup> round)*, Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

Panda, B.K. (1996): *Consumption Pattern in Orissa: An Econometric Analysis*, Published Ph.D. thesis submitted to Berhampur University, Berhampur, Odisha.

Radhakrishna, R. and C. Ravi (2004): 'Malnutrition in India: Trends and Determinants', *Economic and Political Weekly*, Vol. 39, No. 7, pp. 671-676.

Whitney, E. and S.R. Rolfe (2008): *Understanding Nutrition* (11<sup>th</sup> Edition), Thomson Learning, Belmont, USA.

World Health Organisation (WHO) (2010): *Nutrition Landscape Information System (NLIS) Country Profile Indicators: Interpretation Guide*, Geneva.



## TRUMP'S DEADLY PROCLAMATION ON CLIMATE CHANGE: A PARADIGM SHIFT

**Rajesh Sahu\***; **Dr. Pramod Kumar\*\***

\*Ph.D. Research Scholar,  
Department of Politics and International Studies,  
Pondicherry University, INDIA.  
Email id: sahurajesh.72531@yahoo.com

\*\*Assistant Professor,  
Department of Politics and International Studies,  
Pondicherry University, INDIA.  
Email id: pramodkumarjnu@gmail.com

### ABSTRACT

*The Global community have continuously trying to stabilize earth's atmospheric conditions through numerous conferences and agreements. While the leading country like US does not supportivein this incongruous situation and typically when it comes to environmental concerns and climate change. The world was devastating after President Donald Trump proclaimed that the United States will no longer support the Paris Climate Accord, which is an essential misapprehension of the mode by which the accord operates. It also goes in contradiction to the long-standing climate doctrines, and is blind as a bat for not developing clean energy drifts. In genuine terms, the United States had triggered a breakdown of mitigation plans and assistance to climate funding. And, while the bureaucrats and business organizations are backing Trump's indiscreet decision whereas some intellectuals, scientist and environmentalists incongruous with that verdict. Thus, we can say that the US cannot be considered as a trustworthy companion for global climate collaboration. This paper is an attempt to evaluate the Post-Paris agreement on climate change and define a slight look upon US climate politics through an analytical framework. There were huge number of hitches befell after Trump's denial from Paris climate deal and still developing countries are standing for the agreement with sacrificing their own developmental plan. Therefore, it is an endeavor togive some light upon the covert truth of US and its dissuaded action on climate change which has been influencing other developed and developing countries to set forth from Paris agreement.*



**KEYWORDS:** *Climate Change, Paris Climate Accord, Climate Doctrines, Climate Funding, Trump's Denial*

---

## **INTRODUCTION**

The day Donald Trump took oath as president of United States (US) in 2017, the world thinks tanks, Ecologists, Policymakers and Environmental activists have been curious and waiting: will he or won't he support the Paris Accord on Environment and Climate Change?

Besides, everyone was seeking an answer to this biggest question, when 1st June 2017 Donald Trump announced that "to fulfill my solemn duty to protect America and its citizens, the United States will withdraw from Paris Climate Change accord..."(*The White House b, Statement by President Trump on the Paris Climate Accord*, n.d.). This Article will deliberately assess the consequences of Trump assertion on Climate Change accord for the forthcoming generations and Post Paris agreement, the expectation for achieving a global temperature goal, the assistance for the allocation of climate finance, the political game of America against developing countries, like India. Also, this is not the first instance where the US has denied from Climate Actions, however, this action was repeated even before in 1995 at the Kyoto Protocol on Climate Change. In this protocol, industrialized countries have the accountability to balance GHGs emissions founded on the principles of the convention. Although in the meantime the US pulled out its hand from the protocol for its own self-seeking objective.

Trump has repetitively exclaimed that climate change is not real and it's a swindle. In June 2014, he has tweeted persuasively to the world's climate scientist: "This very expensive global warming bullshit has to stop". So, when he was elected as president of America, which has discharged more than 15% of greenhouse gases in the atmosphere, pronounced that the United States (US) will withdraw from Paris Climate accord. Undoubtedly this news was shocking but it was expected from Trump as of his earlier statement. In early December 2016, Thomas Pyle team for Department of Energy had been leaked the information of U.S. Climate Change Policy. Basically, in that document he stated about U.S. policy on climate accord: (i) take the US out of Paris climate change agreement, (ii) rubbish Obama's clean power plan, and (iii) make sure that the pipeline project, including the Keystone XL pipeline, go ahead.

No doubt, Trumps administration, and his associates represent and /or symbolizes the interests of a certain portion of the elite or ruling class interests, fossil fuels businessman, and other rich entities, but it is not an apt decision of the US to wither away from Paris climate change agreement. For instance, the Paris pact has not moved out or vanished automatically with the US ruling class as a whole, as the Environmental policy has been favored by most of the countries in the world. In addition, Trump impetuous decision has not been approved by the dominant classes of the trio, such as Western Europe and Japan. He has ignited the nationalistic behavior among people of America and has tricked American mass mind by saying "America First". It just a power game and business-oriented policy to win peoples heart by making false promises. He has also destabilized the American leadership trio by making that incongruous statement.

Before we discuss the inferences of this inconsistent action next to these facets, it is essential to primarily explore the fundamental cause for the US termination along with Trump's peculiar venomous arguments. Trump said the Paris international accord will have to influence "the Job safety, lowering remunerations and closed industrial unit", that it punishes America and American people...despite the fact there is no eloquent imposition on the commitments to the

world's principal contaminators, that it "is unjust, at the extreme uppermost stage, to the developed country like the United States," and this will be a cause of "huge redeployment of wealth to other nations". After all the study and analysis it seems that it is mostly three disturbing causes which augur the US denial of global Paris climate cooperation.

The first and foremost thing is disloyal to the agreement, deliberately or not, a basic misconception of the fundamental structure of the Paris climate agreement (Bodansky, 2017; Rajmani, 2017). This agreement is basically arranged about the bottom-up deliberative covenant; each nation put on the desk what they feel essential for mitigating action as well as economic assistance. The single most indispensable point of the Paris climate accord is a procedural one, like reporting improvement as well as frequently notifying pledges. By means of this given edifice, US is displaying as a dupe to this agreement as it basically misapprehends the accord.

Secondly, Trumps demanded the idea of fairness in climate change diplomacy in such a way that contradicts in the long-standing past negotiations (Dubash, 2017). Generally, the concept of equity and fairness resolute by those countries which have accountability for triggering the difficulty- in excess of their nationally determined emissions –and that all countries are giving their best part to solve it, in accordance with their ability to undertake the issue. In time duration these arrangements have long been afflicted by paradoxical assertion, and Trump terminates the basic root of the talk of fairness principle. In its place, he is trying to alter with the notion that all countries, whether small or large, should abide by equal accountabilities regardless of their ability and responsibility. This explanation throwaways the substantiation of a principle, even as a basic one, any discrepancy of action over the technologically and economically weak countries or the nations which are not much accountable for augmenting GHG emissions (Jayaraman & Kanitkar, 2016).

Thirdly, by underlining the possible financial disadvantage of climate change action-employment, shuttered manufacturing works, detriment in trade- this made clear the Trump idea about America first policy and he disagree with the sustainability of a low carbon adaptation at a very fair and inexpensive rate. Trump proclamation is grounded on a business financed review (NERA, 2017) that has been comprehensively condemned by Environmental activist and Environmental Scientist (Kaufman, Gasper, & Igusky, 2017; Steinberger & Levin, 2017). Beyond all criticisms, the only essential speech that draws attention is the record cost situation amid the numerous existing principal report, and that related to the expected height of novelty in renewable energy. This declaration wounds the climate at a decisive comprehension that fortified the Paris Accord of political arrangement; that a very less expensive coal seeking power conversion is workable at a fair, equitable and subsidizing financial price tag. Emasculating the very basis of this memo nourishes the political averseness to confront climate change problem in the United States.

The fair policy amenable structural design of Paris and the assurance of falling price in energy transition trio were worth mentioning in Paris Climate Accord. On the contrary, the US withdrawal from Paris climate deal along with its 3 essentials notions can have seriously caustic on the solidity of the covenant. The biggest question here is; in which basis these ideas have been promulgated and how it influences material components?

### **Upswing of Global Temperature: Does US repudiation traumatize or not?**

The rising temperature of the world if one has to switch in real, the prospect of the reduced feat by the US is disconcerting. Also, is responsible for the principal share of world collective

emissions ever since from 1850, around 27%, and emanates about 13% of yearly global level emissions presently, standing second after China (WRI, 2014). While in any way attaining the global mean temperature to well below 2005 level or less than 2<sup>0</sup> C, it is imperative to get through Paris climate Agreement that recites developed world like the US have to regulate besides limitation of their share of emissions. Nonetheless, even earlier he made the proclamation, Trump had allowed an executive order on Energy draw out a progression of Obama-epoch events premeditated to curb its emissions(*The White House a, Presidential Executive Order on Promoting Energy Independence and Economic Growth*, 2017). This mandate arrays to hold back or constrain the clean energy plan destined to cut down emissions from the sector of electrical energy, boost ceilings on exhausting federal land for extraction of coal. The United States undertook to attain for 26-28% decline in its own level of emissions by 2025, as per the baseline year 2005- was in no way precise in the face of Obama-years plans, but the Trump directive utmost condenses the chances of the US encounter this agreement. As one of the studies reveals that the US will diminish its emission intensity by far lesser amount from 15-18% by 2025 (Larsen, Larsen, Herndon, Mohan, & Houser, 2017). However, most of the environmentalist, leaders and think tanks are contend that the Trump action pledge on climate change policies may perhaps not upshot as much as foreseeable, as market forces are operating in the direction of clean power sector impartial to all regulatory measures. Therefore, we can say that it is skepticism that Trumps' executive energy diktat unties endeavors to attain the US undertaking and make up the temperature level 2<sup>0</sup> C arduous to accomplish.

The US opinion poll proposes that a wide-ranging mass alongside inhabits support is there for continuing with Paris climate deal(Marlon, Fine, & Leiserowitz, 2017), and also 42% people sight that draw out will upset the US financial condition, whereas 32% still consider it will boost US economy (Langer, 2017). However, the consequence cannot be predetermined, as there is every possibility that some of the go-slow alleviation action may, over the period, be overturned both through market powers and mutual efforts by pro-climate partnerships stroke in the developed country like US.

### **Action and Reaction of the World**

With the marking level of GHG emissions in the atmosphere and one of the largest pollutants of the GHGs in the world, US denied following the route of Paris climate accord. The amount of GHGs US is constantly emitting, any growth, or even the current status, incantations catastrophe for exertions to comprise the methods of global warming and climate change.

During the presidential campaign, Trump has disregarded the environmental activist's protest and his associates' advisors, like Myron Ebell, has condemned the climate reality and changing the state of affairs. It is not much shocking and has expected that Ebell who is a director in the ultra-conservative Competitive Enterprise Institute, is on utmost re-counting the Ecological movement as "the ultimate threat to human liberty and prosperity in the realm" ("Trumping the Environment.," 2017). Edward Scott Pruitt is another climate refuter, is an American lawyer and Republican Party member as a politician from the state of Oklahoma, registered as of 14 court cases contrary to Environmental Protection Agency (EPA) on the side of oil exploration companies. That these are the men who are tasked to protect the environment is an ominous indication of what we can expect. The climate problem is condemned and is supporting Trump policy- fossil fuels commercial groups and the leaders of US industry- have been pronouncing for their own self-motivating interest in the name of America.

Besides, that Scott Pruitt, administrator of Environmental Protection agency (EPA), said that India and China turn a profit from Paris accord. In addition, he claimed, that they weren't desirable to take any positive action towards lessening of carbon dioxide (CO<sub>2</sub>) till the year 2030 (The Hindu, 2016).

The United States is not the only country which has denied the climate change accord, but others countries like Canada, Australia and Russia are also in the same route of denials, whether they are small or large in number (Russell, 2017). The alt-right Breitbart News chairperson is also one of the blunt decliners of climate change policy in Trump administration. To go against the Environmental agencies and EPA, they appointed Rex Tillerson as secretary of State, before that he was the CEO of Exxon Mobil. Besides, a number of US republicans admired trump decision.

However, there are many governments, organizations, leaders, and environmentalists supporting climate policy and strongly disagreed with US decision. The former president of USA, Barack Obama, said that the US had merged with "a small handful of nations that reject the world future" (Aljazeera 2017). And, at about 75 cities mayors are in support of Obama's view, counting with Los Angeles, New York City, and Chicago, by assuring to espouse the goals of the Paris climate agreement in contrast to the trump administration.

The former secretary-general of UN, Kofi Annan, enunciated that "The Paris agreement is born out of the effective multilateralism and a desire to find a cooperative solution to the global problem. No one country can dismantle the agreement. Environmental activist and its associated groups were aghast. Tanya Steele, CEO of WWF held the view that marks it harder for the people of the world to obtain a safe and sound future. She is hugely dissatisfying that the US is brought into being the blunder in rowing back on the Paris accord," she stated that "Climate change is a very genuine worldwide issue that affects the fruitful future of our planet". Even NASA astronaut Scott Kelly alleged that moving back from Paris agreement "will be devastating to our planet" (Aljazeera, 2017).

Furthermore, the European Union's Commissioner for Climate Action & Energy, Miguel Arias Canete, said it a gloomy day for the international community, as the US turns its back to combat climate change. EU profoundly regrets this unilateral decision (News, 2017). The US has subvert combined effort to cut emissions, adaptation to renewable energy sources, and bolt in forthcoming climate dealings. However, the US peoples, diplomats, mayors, and mostly the coal industry also ensuing the mandate of Paris climate accord. While Trump and his republican parties associates are disowning the Paris climate accord. Even so, it could be conceivable that the US has lacked its global leadership and are building china's root for global leadership as it is the firsthand emitter of GHG. Similarly, Trump is lacking public support as most of the US people are willing as well as taking the side of Paris climate agreement. Indubitably, environmentalists and climate activists say if the U.S. pulling out from the accord leads to additional ascetic climate alteration then that would critically detriment US financial stability (Domonoske, 2017).

### **Impact on India and Other Developing World**

Trump has oversimplified his arguments in the name of American's future and point out India's failure on climate change achievement. He has stated that India is the largest emitter, and neither succeeding and nor it was anticipated to do any considerable effort on climate change under the covenant and it was necessitating a huge amount of financial help in the response of a tiny cause

(Times, 2018). However, everyone knows that it was just a misread statement, to divert the topic behind the shadow of American youth and their future.

The developing country will be hugely affected, if continuously temperature rising, in such a pace and “ if upcoming alteration simulate past alteration, unequivocal warming is projected to restructure the global economy by plummeting average global incomes coarsely 23% by the year 2100 and widely spread global income inequity and in proportion of the consequence devoid of climate change (Marshal Burke. et al, 2017).

India has not been reacted suddenly after trump’s unambiguous statements against it. Whereas India’s energy and renewable resource minister, PiyushGoyal, had lately indorsed about the South Asian titans’ obligation in the direction of global climate accord. There is no doubt, India is one of the principal emitters of CO<sub>2</sub> and standing at the 3<sup>rd</sup> bench in this field, but it started to walk on the path of renewable energy extension goals and it fixed its target in Paris 2015 at about 50% as well as three years in advance before the commitments goal (Vaughan, 2015).

The significant question lies in the forefront, after US sceptic to Paris accord, can developing countries be actuating to act further and beyond their national interests? The honest answer to this question is No. As the developing countries are unable to fulfill people’s socio-economic conditions inside their territory, even most of them have been depending upon the developed countries for their sustenance and progress. Subsequently, these developing countries are extremely contingent on the developed world, to accomplish their nationally determined contributions. The US disowning from Paris climate will be severely distressing upon the developing countries and there might be impediments for developing nations in terms of finance and assistance. Further, the situation might be ambiguous, every nation is discerning and back-up their national self-interest, and countries turn their back concerning to nature. Accordingly, this status quo leads to ecological imbalance and climatic disruption in its complex level, as countries run off to ecological consideration due to lack of economic back-up(Roy, 2015).

Even though the countries will face the inexorable climate disorders apart from the US, the developing world will mostly endure on this whim. At present, they are by some means sustaining their domestic interest with climate action, but what is now, there will be a tight encumbrance for them to uphold both national interest and ecological security.

The United States and its allies are equestrian an assault on the convention, looking for hinder the provisions and their responsibilities; reformulate disparity so as to smudge the diverse obligations of developing and developed nations; and sketch out a lawful “crossbreed” agreement, largely be suitable for the US administration’s dealings with the US Congress, as the latter being virulent towards the climate change question.

Article 9 of the UNFCCC talks about the Finance of the parties, for both developed and developing countries. While earlier to the ultimate end result in the Paris Accord, the thrust of the developed nations’ place on the subject of finance was to boost the donations of developing countries by recommending stipulations in the writing like “all parties in a position to do so” should arrange for financial possessions or that the collection of funds for climate finance is a “shared effort” of every parties (Raman, 2016).

Burden, lack of efficiency, hesitation, show-up activity, improper work structure, more focus in countries economic development, world temp will rise by tenth of a degree or two, pollution in



US will give others odds to make fresh excuses for their anti-ecological activity, industry will grow and use of fossil fuels will be more by following US path.

Eventually, developing world will put the question, if the developed countries like US is not fretful and anxious, why do they meditate and act with compromising their national development.

### **Substantiation of the Reality Claimed by Trump's on Climate Change**

Trump has been proclaiming that the U.S. had pull out from the Paris climate agreement, and has misdirected the responsibility so accordingly distress the coal power plants, besides that he placed an unstable factual groundwork for his verdict. In Rose Garden at White House, an advent of roughly some of the indictment monologue and a supplementary case sheet concerning to the pledge to hold back emissions accountable for wide-reaching global warming.

Trump has stated that the Paris climate agreement, “would proficiently amputate our coal industry”, which at present furnishes nearly One-third of US electric power. While in reality, the U.S. coal manufacturing business was in debility prior to the Paris Agreement was validated in 2015. The prime root behind this has been contesting from cleaner-burning natural gas, which has been prepared low-cost and more copious by way of hydraulic splintering. In addition, Electric expediency has been switching coal industries with gas-fired amenities as they are farther efficacious and low cost to maneuver.

Secondly, he postulates unconditionally massive economic headway ever since Election Day”, accumulation of “over a million private-sector occupations”. Fundamentally it's noxious, nevertheless, he gains no recognition for this employment generated in the months earlier he befitted as president. Substantially, to fill up that figure, the president Trump had to travel back to October 2016. And then, private sector profession making between October to April at nearly 171,000 within a month, fall just faintly back the footstep of career-making for the preceding six months at about 172,000, utterly under its erstwhile President Barack Obama.

Thirdly, Trump has enunciated that he was chosen to exemplify the citizens of Pittsburgh and not For Paris. That may perhaps true, nevertheless, Allegheny County (is located in the southwestern quarter of the state of Pennsylvania), which consist of Pittsburgh, is not comes under the jurisdiction of Trump Country. This county voted devastatingly for the presidential candidate Hillary Clinton in November election, supporting her by a verge of 56% compared to Trump's 40%. Substantially, this city has its own climate action plan encouraging to give a lift for usage of renewable sources of energy. However, the mayor of Pittsburgh has ensured that their populations will go along with the guiding principle of the Paris Accord for the safety of their people, their financial system and for future generations.

As per the study, reaching the Obama administration's provisions in the Paris Agreement would outlay the U.S. budget of about \$3 trillion in excess of then quite a few decades. And, by 2040 the U.S. would financially drop 6.5 million industrial and business sector jobs together with 3.1 million manufacturing kind of employments”. However, in reality, the survey was remunerated by twofold consortiums that have long been going up against ecological parameter that two deniers are the American Council of Capital formation and the U.S. Chamber of Commerce. This dual groups protected by economic assistance from those links who gain earnings from the continuous scorching of fossil fuels. Besides, the second group has obtained funds from organizations regulated by the well-known Koch Brothers, whose business possesses plants, and



oil and gas pipelines for over 4,000 miles. According to the study, which says that it creates upsetting molds may puff up the price of encountering U.S intentions beneath the Paris climate agreement whereas primarily snubbing the financial welfares of U.S. industry from making and in service renewable expansions policies. While the academic research has set up that augmented environmental guidelines don't really ensure any considerable influence on jobs. Further, employment fell a contaminating big business tend to be counterbalanced by fresh employment in other sectors like renewable and green technology.

According to the Massachusetts Institute of Technology, "if all the associate countries obtain their faithful commitments, the effect on the environment would be meager," cutting heat upsurge from the atmosphere by "less than 2 degree Celsius in 2100." Although, the actual fact uncovered in limelight by the co-founder of the MIT program on climate change. Basically, he said that the administration refers to an obsolete account, distant to the fact. Furthermore, the climate scientist, Jake Jacoby apprehended the authentic report on climate, the global influence of procuring goals beneath the Paris Agreement would be to check mounting heat or temperature by 1 degree Celsius or else we can say 1.8 degrees Fahrenheit. Moreover, they disclosed a number that formulated the idea which they wish to build." Further, Jacoby pronounced "It's sort of a debate trick" (Hindu, 2017). For most of the people, one degree may not be much in our thoughts and may not sound like copious. However, the climate scientist Stefan Rahmstorf, at the Potsdam Institute in Germany, articulates the notion, "Every tenth of a degree rises the number of incomparable paramount weather conditions to a large extent."

### **Trump's Denials and Its Impact on Natural Resources**

Natural resources including land, air, water, soil, minerals, and biodiversity are the basis of life. They not only determine the excellence of natural life but also be responsible for safety and progress, to speed up economy, development, and for peoples consumption, and is mandatory for a well thought-out idea with organized mode of consumption. To uphold development for a widespread time it is very crucial to make use of resources in an appropriate manner. Overutilization of natural resources possibly will cause critical environmental disparities. The living planet statement estimates that the earth can refill every single year, which is heading to deforestation, degeneration of soils, contaminated air quality, and water alongside falloff in an amount of fish and effects other ecological life. Laterally, the matter is also deteriorating as inhabitants and over-consumption keep mounting quicker than technology locates fresh directions of augmenting what can be made from the natural world. The stern development of today is at this moment debriefed as it is not just for satisfying the essential needs but it is for greed. Our over possessive mentality, over-dependent of technology and inadequate Ideology are also liable for the excessive use of resources. At present, the idea of capitalism has triggered a road to consumerism so it has turned out to be the obstruction of lifestyle.

According to the Living Planet report 2008 that produced by the Zoological Society of London, which comprises detailed report and knowledge regarding on the "Water Footprint" of every single country and proclaims 50 countries are at present undergoing "moderate to severe water stress on a year-round basis (Jowit, 2008). It illustrates that less than 27 countries are importing beyond half the water they use in the arrangement of water expended to yield crops from wheat to cotton- including Switzerland, U.K., Norway, Netherlands, and Austria. Now everyone has to think and should realize that are they expanding and consuming more than what is available? The current resources available on earth can be able to satisfy demands of less than 2 billion people but now, nearly 7.5 billion people are living on earth, and we can say it is purely

destructive. At present, the peoples are using 2 to 3 times more of the earth's natural resources than their actual needs. At global sphere, only 2.5 % of the world's over-all water volume is fresh and potable out of that 70% is frozen. Therefore, the whole world must understand that the situation has become alarming. Our earth's natural resources are terminating in a reckless manner.

After Trump has pulled out from Paris accord most of the renewable sector energy got troubled. Consequently, his over abusive statement regarding the coal use and other oil production, consumption patterns violating the stability of natural resources and within no span of time our natural biodiversity and resources will vanish, and would not be possible to restore. Then our life will be affected and nowhere can anyone find any natural resources, situations like the primitive era of our first civilization. Further, the climate is not going to spare any country or people whether it is U.S. or India, effects are global.

In addition, now, the researcher and scientists are persuaded, that if the global emissions hold on to representative concentration pathway (RCP) 4.5, the world will very nearly be assured to stay below two degrees of global heating, and could save our planet and its natural resources. And to accomplish the target, fifty percent of the Earth's global energy must use from renewable sources by 2060. Thus, not only the developing world will have a great requirement for renewable energy solutions, but the developed countries have an important role to play as well (Salawitch et. al., 2017)

### **India's Action**

The initiatives of climate action stroke undertaken by India to curtail carbon dioxide emissions are higher than the developed countries, what U.S. and EU are doing. To drop disbursements of fossil fuels energy is a prerequisite of the time, and to cut down radiations we must be packed with energy from hydel and solar, zero budget of natural deposit that will sort out a large number of complications from the environment, beyond everything. In this sector, India is committed to shifting towards clean energy in a more energetic manner and intended for 175 GW (Gigawatts) of clean energy, with 100 GW for solar, 60 GW for wind, 15 GW for others by 2022 (Make in India, 2016). Also, it will expurgate its intensity of emissions within 33-35 % of 2005 levels by 2030. Further, India has largely committed towards National Solar Mission with a goal of 100 GW of solar capacity to set up by 2022. Besides, it has approved a scheme, "Jawaharlal Nehru National Solar Mission" that targets at development and deployment of solar power technologies, in its domestic sector to acquire uniformity with grid power tariff by 2022 (Singh, 2010).

### **Game Analysis**

Now, it is very indispensable to concerned about the perspectives on all essential issue of how human race can work towards, and create, a sustainable footpath for future generations. At the other side of the gamut, without technological advancement which can hold back carbon discharges, the destiny of the fossil fuel business and the steadiness of Earth's climate will be sealed in a zero-sum game. "Climate's success is the industry's failure and vice versa." It is all transparent that coal-centered industries and financial system confront mounting obstructions to the consumption of their products. Whether by legal restraints, taxes, ethical urgings, moral contentions, nepotism for contenders, or impeded ingress to commercial markets, the industry meets its future that is less tolerant of present-day application.

In International system the major problem facing and realizing by developing and underdeveloped countries in terms of climate change is that; first, the absence of a supranational authority; and second, developed countries are not in a position to compromise their national self-interest for controlling Greenhouse gases emissions. Through numerous policies and incentives, as well as undertaking false promises and aid to developing and underdeveloped world, the developed country has been trying to escape from controlling carbon dioxide emissions. They are misleading and cheating other nations through policies and principles such as cap-and-trade, technology transfer, polluter pay principles and other. The maximin principle is prevailing in international system, where every single country is trying to maximize their gain and thinking about their self-national goal other than the climate change problem. Besides, the real problem has been continuing in the globe due to the strategic game playing by developed world (Chander, 2018).

### **The Role of Peer Pressure and Public Opinion**

Peer pressure is considerably operative other than any rule, accords, acts, or regulations could conceivably be. However, it should be noted down that the term “climate change” stand an uncertain problem and companies would be sensible to bring up to all related actions as sustainability.

Likewise, public opinion is a major tool in democracy which can influence the decision-making of government and stabilize current day climate disparity. It has never been prodigiously in defense of, or opposed to, the notion of man-made climate change. But, in the present day heated political atmosphere, it is vital to be aware of who are the framer of public opinion (i.e., media and researchers chasing dollars). It is obvious that media influence public opinion. If Al Gore says our planet is melting day by day, media must find out its reliability that it is, or isn't. And, it depends upon the readers to believe it or not. Since those early period climate sciences exactly billions of (mostly) public dollars have been disbursed on climate research. Even most of the Universities and research centers go in pursuit of money to continue. If folks who regulate the money alleged that Climate Change is real, the indication is very strong to researchers what they have to do with. It's similarly obvious to reporters. And, if a researcher is media savvy all the better. As there is a phrase which says, *Quotes make the story!* Most of the reporters are, by nature and profession generalists. They are unaware with the fact and do not recognize what questions to enquire about complicated matter, and even not understood what the answers signify.

The miserable reality is that most of the reporters incline to think and act in a similar manner, and that human nature surpasses all occupations. Unluckily, it leads to a path of group thinking, one view point, hampers in finding, and dissenters are generally out of favor. It does not amaze that the society has little faith in the media house, politicians, and researchers when it stand comparison with Climate Change.

An endeavor to lessening climate change, including reporting, has directed to a height of advancement in energy efficiency (EE) adoption scheme, which continued to be the most productive and determinate step and can be ready to lend a hand in diminishing carbon emissions, decrease energy practice, and boost efficiency, which the world has to think it over (Priddy, 2017).

### **Climate Justice and India's Leadership**

Our planet is burning and the U.S. longstanding leadership is no more relevant after its backpedaling from Paris climate accord. To acquire climate justice, developing countries need to get close and take a necessary action as well as initiative in a broad way (Shue, 2014). Consequently, India can have a chance to lead these developing world and mark out an “all-embracing comprehensive global climate policy objective” to be a helping hand for the post-2030 conciliations. An illustration, proposal prepared by technologists and scientists that the “final destination” of the sustainable development goals (SDGs) in fusion should be an “all-encompassing objective” of “a thriving, better quality of life that is reasonably enjoyable and sustainable” and should also be the long-standing aim of the Paris Accord.

The second approach of India should be to pull back from bearing in mind about emissions of carbon dioxide to the causes, or modification of activities that lead to the emissions. In this context, the worth of energy is essential to the economy and have paramount importance to modern-day urban society. As of today, the global climate policy nuisance due to the urban model of energy use and their critical intensity level of emissions. About 30 % of future emissions can “lock-in” its domain. Further, over 800 Gt are at present obligated owing to the infrastructure built and acquired equipment, which is a considerable share of the world's existing carbon budget of 1,000 Gt to halt in limits of the two-degree roadmap. If present fashion of development persists, the global coal budget will be secured earlier to 2020. As a result, in 2018 framework for climate justice and following policies, the forthcoming goal should be well-thought-out in relations to change through transformative action and concerning over technology transfer rather than undeviating act and regulation of carbon substances. The intergovernmental accord is currently giving emphasis to sustainability for accomplishing climate objectives for countries at numerous stages of welfare and gaining access to renewable sources of energy and advancement in zero-emission technology and most necessarily its associating technology transfer into the estimation.

Third, as per the report of International Energy Agency (IEA) that evaluates the increase in global temperature and to keep switch below 2°C, global emissions of carbon must be only 18.8 Gt in 2040 which is 40% lower than existing levels. Substantially, it also forecasts the necessity for energy demands to upsurge by almost one-third by the year 2040, and even though countries implement innovative or additional low-carbon strategies, emissions in the energy sector are estimated to rise by about 16%. The prevalent question now is how to make certain for an acceptable and affordable energy ingress holding inside the global environmental parameters continued to be an unsolved topic. Energy and its consumption pattern have been an important dimension and now India has a very broad outlook to showcase its leadership attitudes towards climate security. Substantially, India should also deal with distribution problems on the characteristics of the need, developing and developed, driven by countries related standards of living with entering the energy protocol. India needs to make effort to limit on high-level consumption for high-income countries where a material intensive development phase is prevailing. The Organization for Economic Co-operation and Development (OECD) is an intergovernmental organization and its countries per capita material consumption are so high and these countries are high-income economy remains around 60% above the world average. How we could be best alter lifestyles according to our precise necessities in terms of energy consumption and national situations necessitates being formulated a major part of the global appraisal (Sanwal, 2017).

Fourth, in the auditing of emissions, the distinction amongst what countries are carrying out and what actually they should be doing will currently very prevalent and noteworthy. As per the IEA report which has estimated that right now heating and cooling system in urban areas rooms buildings and industry responsible for about 40% of ultimate energy dissipation, in this consumption loop transportation distinctively accounting for roughly 27%, and more than about 40% of emissions reductions necessitated by 2050 could possibly emanate from energy efficiency while upholding the stratum of energy amenity (Sanwal, 2017). The reserved energy on earth can be best placed to evaluate cross country interstice between “accessible” and “exercise”, depend on countries standards of living and not emissions. In Paris Agreement switch to national implementation, instead of global norms, signifies that an individual performing for the long-term altruism perceive no gain if inequalities in standards of living continue without analogous actions adopted globally. The associated drawback is that there is no worldwide accepted standard of security, predominantly infrastructure supporting, home-based and transport services, as there is no prototype of a low-carbon metropolis or township in anyplace. At this instant India must ask the question, “how much energy is desirable and how much carbon dioxide will be emitted to uphold comparable standards of living?” The Intergovernmental Panel on Climate Change (IPCC) should be ascertained with a distinctive report to illuminate this legitimate “common concern” as it is a nucleus for brushing up the competence of national action.

Fifth, the attention of the future negotiations should be on long-standing targets to backing the post-2030 plans, and concentrate on the discrepancy in the Paris Agreement with the overstress on proximate period alleviation dream as broached in existing Intended Nationally Determined Contributions. The question that diplomats have to focus is in long-lasting to influence social justice, equity and the necessity for fiscal development and security in balance. The post-Paris inquiry is especially to be more pertinent to lawmakers or policymakers. India must instigate to headway its own social science research to patronage the multifaceted process of advancing rightful solutions. Today this multifaceted process answer should be demand from the scientific evaluation, political deliberations and national policymakers to the existential question of post-Paris: how we should react to the population growth into the urban middle class where the Planet becoming an organization of consumers, putting them at the core of the universal economic system, standards of living and climate change?

## **CONCLUSION**

Anthropogenic activity has led to a source of ecological imbalance and pollutions such as sea erosion, flooding, inundation, food shortage, crops destruction, and overpopulation making situation worse. How to reconcile this condition with a globally united action is now the biggest problem that we all are grappling in existing state of affairs. The specter of death is at the doorstep in disguise of climate change, therefore, serious demands stroke require in our consumption patterns. Substantially, for alleviating climate change threat and balancing levels of economy a need of urgency necessitated and utmost importance towards the progression of sustainable development and clean energy sources.

Now, there should be a permanent rule by every single country to promote ‘Green Culture’ or ‘Green Laws’ with a reduced amount of carbon sequestration besides lessening the intensity of GHGs emissions. We must think now for our future generations, by means of forgetting all our disparity and dissension.



The importance of clean or fresh energy carries the strength of energy requirements, easing influences of climate change and ascertain sustainable development, specifically when the population has been expected to seize nearly 9 billion besides the extreme level of consumption by 2040. The global fossil fuel credited for about 82% of total power energy stockpile, stands for the embryonic challenges of ecologies and sustainable development.

The need for a collaborative international stand for setting the pitch for fostering in the field of renewable energy and binding the technological, financial and knowledge drafts among the developed and developing countries for the advancement of clean energy sources. Everyone has to play their part individually to accomplish the goal for a sustainable environment. Also, a need for togetherness and cooperative efforts required for balancing this uncurtail and unstoppable effects of climate change. This requirement also varies from countries to countries and from domestic to local level. As it is dependent on the survival of all and a real challenge for every subjects like economics, politics, international business, science, sociology and others academia.

The hegemonic country like the US has been now turning its head besides destroying the present stability or intensity to a higher level through passing as well as allowing coal-based plants and other anti-renewable energy policies. The president of America is no way accepting the real threat of climate variability or change and has been frequently telling it as a 'hoax'. Whereas the people and other think tanks have been supporting the problem of climate change. Furthermore, as per the current report provided by the Journal of Science, a NASA program called the Carbon Monitoring System (CMS) that cost \$ 10 million per year has been canceled-which tracked carbon sources and sinks for carbon as well as high-resolution models of the earth's carbon flows-is a terrible mistake. Now, the point is not that who is right or wrong but actual point is that what we should do to protect our planet's present as well as future resources, environment, forest, population, besides our upcoming generations' future in a healthy and secure or stabilized manner.

Today, India has the chance that it could play a prominent role in accelerating capacity building with the amalgamation of local awareness, national action, and scientific technology by carrying with the ideas, skills, and technology of global, national, and local communities. Even, by now, India has initiated in the direction of clean energy, providing universal steadfastness to the problem of upholding the equilibrium among energy needs for driving the financial growth and lessening GHG emissions by lay emphasis on the progress to make the most of renewable energy sources as replacement of conventional sources of energy, in an all-inclusive manner. India has changed its route to fight the stumbling block of energy security besides abundant demands of energy and extenuating the climate change effects by accomplishing the objective of 175 GW of Renewable Energy (RE) volumes by 2022.

The whole world is very thoughtful but when it comes to act those thoughts have been missing. So, it is not simply to think, whereas the need of the hour is to act upon those thoughts for cherishing the future. Moreover, the actual issue is not to adapt policies but to act upon those policies with a reasonable tactic and lively manner. In addition, to address this all-embracing problem of climate change, the most necessary step for today is that 'the attachment of all in one and one in all'.



**REFERENCES**

- Aljazeera. (2017). World reacts to Trump's Paris climate accord withdrawal | Trump News | Al Jazeera. Qatar: AL JAZEERA NEWS. Retrieved from <http://www.aljazeera.com/news/2017/06/170602051722262.html>
- Bodansky, D. (2017). Sound and Fury on the Paris Agreement – But Does It Signify Anything? Retrieved from <http://opiniojuris.org/2017/06/02/33147>
- Chander, P. (2018). *Game Theory and Climate Change*. New York: Columbia University Press. Retrieved from [https://books.google.co.in/books?id=q0pBDwAAQBAJ&printsec=frontcover&dq=climate+change+and+game+theory&hl=en&sa=X&ved=0ahUKEwjZnv6fq8vcAhUHAvAKHQndDuEQ6AEIJjAA#v=onepage&q=differnt types of games&f=false](https://books.google.co.in/books?id=q0pBDwAAQBAJ&printsec=frontcover&dq=climate+change+and+game+theory&hl=en&sa=X&ved=0ahUKEwjZnv6fq8vcAhUHAvAKHQndDuEQ6AEIJjAA#v=onepage&q=differnt%20types%20of%20games&f=false)
- Domonoske, C. (2017). Trump Announces U.S. Will Leave Paris Climate Accord: The Two-Way. Retrieved March 20, 2018, from <https://www.npr.org/sections/thetwo-way/2017/06/01/530748899/watch-live-trump-announces-decision-on-paris-climate-agreement>
- Dubash, N. K. (2017). Trump's Toxic Announcement on Climate Change. *Economic and Political Weekly*, 52(24), 14–17. Retrieved from [http://www.epw.in/system/files/pdf/2017\\_52/24/CM\\_LII\\_24\\_170617\\_Navroz\\_K\\_Dubash.pdf](http://www.epw.in/system/files/pdf/2017_52/24/CM_LII_24_170617_Navroz_K_Dubash.pdf)
- Hindu, T. (2016, April 3). Paris climate pact bad deal for U.S., says Trump administration. *THE HINDU*. Retrieved from <http://www.thehindu.com/news/international/paris-climate-pact-bad-deal-for-us-say-donald-trump-administration/article17766480.ece>
- Hindu, T. (2017, June 2). Fact check: Trump's claims on climate change. *THE HINDU*. Retrieved from <http://www.thehindu.com/news/international/fact-checked-trumps-claims-on-climate-change-and-paris-treaty/article18704938.ece>
- Jayaraman, T., & Kanitkar, T. (2016). The Paris Agreement Deepening the Climate Crisis. *Economic & Political Weekly*, 51(3), 10–13.
- Jowit, J. (2008, October 29). World is facing a natural resources crisis worse than financial crunch. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2008/oct/29/climatechange-endangeredhabitats>
- Kaufman, N., Gasper, R., & Igusky, K. (2017). U.S. Chamber of Commerce's Energy Institute Misleads on Climate Action Costs: 3 Things to Know. *World Resource Institute*, 3–4. Retrieved from <http://www.wri.org/blog/2017/04/us-chamber-commerces-energy-institute-misleads-climate-action-costs-3-things-know>
- Langer, G. (2017, June 5). Americans oppose climate pact pullout 2 to 1; plurality rejects the economic argument (POLL). ABC News. Retrieved from <https://abcnews.go.com/Politics/americans-oppose-climate-pact-pullout-plurality-rejects-economic/story?id=47847725>
- Larsen, K., Larsen, J., Herndon, W., Mohan, S., & Houser, T. (2017). *Taking Stock 2017: Adjusting Expectations for US GHG Emissions*. Rhodium Group. (Vol. 24). New York. Retrieved from [http://rhg.com/%0Awp-content/uploads/2017/05/RHG\\_ENR\\_Taking\\_%0AStock\\_24May2017.pdf](http://rhg.com/%0Awp-content/uploads/2017/05/RHG_ENR_Taking_%0AStock_24May2017.pdf)
- Marlon, J. R., Fine, E., & Leiserowitz, A. (2017). *Majorities of Americans in every state support*

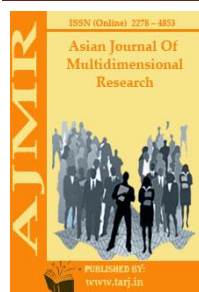
- participation in the Paris Agreement. Yale Program on Climate Change Communication. New Heaven, Connecticut. Retrieved from*  
[climatecommunication.yale.edu/publications/paris\\_agreement\\_by\\_state](http://climatecommunication.yale.edu/publications/paris_agreement_by_state)
- NERA. (2017). *Impacts of Greenhouse Gas Regulations On the Industrial Sector, American Council for Capital Formation Center for Policy Research. Wasgington DC. Retrieved from*  
<http://www.nera.com/content/dam/nera/publications/2017/170316-NERA-ACCF-Full-Report.pdf>
- News, D. (2017, June 1). European leaders insist deal can't be renegotiated. *Mohave Valley Daily News*. Retrieved from [http://www.mohavedailynews.com/news/european-leaders-insist-deal-can-t-be-renegotiated/article\\_07e3bcf4-4760-11e7-b88b-df0189420b6a.html](http://www.mohavedailynews.com/news/european-leaders-insist-deal-can-t-be-renegotiated/article_07e3bcf4-4760-11e7-b88b-df0189420b6a.html)
- Priddy, R. D. (2017). Sustainability: The train has left the station. *MRS ENERGY & SUSTAINABILITY*, 4(3), 1–10. <https://doi.org/10.1557/mre.2017.4>
- Rajmani, L. (2017). Refl ections on the US Withdrawal from the Paris Climate Change Agreement. Retrieved March 7, 2018, from <https://www.ejiltalk.org/reflections-on-the-us-withdrawal-from-the-paris-climate-change-agreement/>
- Raman, M. (2016). Climate Change Battle in Paris.pdf. *Economic & Political Weekly*, 51(2), 35–40. Retrieved from  
[https://www.epw.in/system/files/pdf/2016\\_51/2/Climate\\_Change\\_Battle\\_in\\_Paris\\_0.pdf](https://www.epw.in/system/files/pdf/2016_51/2/Climate_Change_Battle_in_Paris_0.pdf)
- Roy, D. (2015). A Subaltern View of CC. *Economic & Political Weekly*, 50(31), 31–39. Retrieved from  
[https://www.epw.in/system/files/pdf/2015\\_50/31/A\\_Subaltern\\_View\\_of\\_Climate\\_Change.pdf](https://www.epw.in/system/files/pdf/2015_50/31/A_Subaltern_View_of_Climate_Change.pdf)
- Salawitch, R. J., Cauty, T. P., Hope, A. P., Tribett, W. R., & Bennett, B. F. (2017). *Paris Climate Agreement: Beacon of Hope* (1st ed.). Switzerland: Springer International Publishing. <https://doi.org/10.1007/978-3-319-46939-3>
- Sanwal, M. (2017). Climate Change after the G-20 Summit. *Economic & Political Weekly*, 52(29), 24–26.
- Shue, H. (2014). *Climate justice: Vulnerability and protection* (First). New York: Oxford University Press, USA.
- Singh, G. (2010). Jawaharlal Nehru National Solar Mission. Retrieved July 21, 2018, from <https://mnre.gov.in/resolution>
- Steinberger, K., & Levin, A. (2017). Chamber Inflates Costs , Ignores Benefits of Climate Action. Retrieved June 3, 2018, from <https://www.nrdc.org/experts/kevin-steinberger/chamber-inflates-costs-ignores-benefits-climate-action>
- The White House a, Presidential Executive Order on Promoting Energy Independence and Economic Growth.* (2017). *The White House. Wasgington DC. Retrieved from*  
<https://www.whitehouse.gov/presidential-actions/presidential-executive-order-promoting-energy-independence-economic-growth>
- The White House b, Statement by President Trump on the Paris Climate Accord.* (n.d.). Retrieved from <https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord>

Times, H. (2018, February 24). Donald Trump names India, China to defend his policy on climate change. *Hindustantimes*. Retrieved from <https://www.hindustantimes.com/world-news/donald-trump-names-india-china-to-defend-his-policy-on-climate-change/story-bNmevPvH0YPOnWhuHVY8rN.html>

Trumping the Environment. (2017). *Economic & Political Weekly*, 52(6), 7–8. Retrieved from [https://www.epw.in/system/files/pdf/2017\\_52/6/ED\\_LII\\_6\\_11022017\\_Trumping\\_the\\_Environment.pdf](https://www.epw.in/system/files/pdf/2017_52/6/ED_LII_6_11022017_Trumping_the_Environment.pdf)

Vaughan, A. (2015, October 2). India unveils climate change plan. *The Guardian*. Retrieved from <https://www.theguardian.com/world/2015/oct/02/india-pledges-40-percent-electricity-renewables-2030>

WRI. (2014). Climate Analysis Indicators Tool: WRI's Climate Data Explorer. Retrieved June 12, 2017, from <http://cait.wri.org>



## EXPLORING RELATIONSHIPS AMONG INTELLIGENCE QUOTIENT, EMOTIONAL QUOTIENT, SPIRITUAL QUOTIENT AND QUALITY OF LIFE

Dr. Nidhi Shukla\*; Dr. Shweta Gupta\*\*

\*Associate Professor,  
ShriRamswaroop Memorial University,  
Lucknow, INDIA.  
Email id: dr.nidhi.smu@gmail.com

\*\*Associate Professor,  
Fairfield Institute of Management and Technology,  
New Delhi, INDIA.

### ABSTRACT

*At the opposite edge of “survival of the fittest theory” right to live is the fundamental right of everyone. Government as well as corporate sectors is committed to provide quality life to their employees, irrespective to their class and work responsibility. Here it is necessary to mind a significant difference between quality of life and the standard of living. In short we can consider a quality life as a satisfactory appreciable feeling of peace and pleasure and the absence of clashes and disputes. While standard of living refers to the level of wealth, comfort, material goods, and necessities available to a certain socioeconomic class in a certain geographic area, usually a country. In early twentieth century it was believed that to live a successful life Intelligent quotient is must but in the mid of twentieth century it was revealed by several studies that sometimes a person can play his role wisely by emotional quotient, even if it is not sufficiently rich in mean of intelligent quotient because emotional quotient refers to the capacity of recognizing our own feelings and those of others, for motivating ourselves, while Intelligent quotient refers to a rational, logical, rule-bound, problem-solving intelligence. Further it was found that SQ is the central and the most fundamental of all the intelligence, because it becomes the source of guidance for others, being and an integrating intelligence, linking our rational and emotional intelligence. The paper reviews several articles investigating and which are able to recognize the variables of measuring the different quotients and their relations with the quality of life. Quality of life is not a basic need of human beings, but a responsibility for all of us.*

**KEYWORDS:** *Intelligence Quotient, Social Skill, Emotional Quotient, Spiritual Quotient And Quality Of Life*

---

## **INTRODUCTION**

It's a proven track that efficient employees are assets of organization and a branch of knowledge, an entire department is known as human resource department and a lot of researches and experiment are performed to sustain, to develop and nourish the human resource of the organization. Increasing employee's turnover is a big problem for every organization because more profitable proposal may be a matter of profitable deal for a employee but an organization always faces loss. So a strong reason is required to stay in long term with an organization. Therefore researches turn towards researching an extension of intelligence quotient emotional quotient and further spiritual quotient. Emotional quotient simply related to self-emotion feelings and having same for other, developing a strong bound with other and it's all use to accelerate the personal and work life of self and others. The term spirituality in itself reduces several meanings and definitions according to awareness interest and acceptability of people like belief in religion, fear of god or a higher sense of self. Intelligence quotient can be analysed as measured level of cognitive abilities i.e. problem solving and logical thinking (Villagonzalo, 2016).

In above sequence providing a meaningful life to their employees is also a corporate social responsibility of any organization. Meaning full life means quality of life but need not mix it with standard of life. We can consider a quality life as a satisfactory appreciable feeling of peace and pleasure and the absence of clashes and disputes. While standard of living refers to the level of wealth, comfort, material goods, and necessities available to a certain socioeconomic class in a certain geographic area, usually a country.

Whenever the term "quality of life" is concerned of, it focuses on both positive as well as negative aspect of life. The lives we head on reflect the choices we make. Every individual is unique and make completely different choices. These choices depend upon numerous factors i.e. families, community, genes, income and place of birth (Massam, 2002). Indian health care industry is growing at rapid rate and is contribute a majority share in total I GDP of the economy. Major reasons for the growth of this sector are emergence of diseases due to unhealthy quality of life, speedy population growth and government initiatives etc. quality of life depends upon his/her lifestyle behavior (WHO, 2004). Adopting better quality of life is not consequence of single factor only. The desire to improve quality of life is main concern for today's society in every domain from psychology to health care. Quality of life is more broad term than just wellbeing of an individual. Quality of life refers to the less or more good and satisfactory characteristics of person's life (Szalai and Andrew, 1980). Present research work focused on role of emotional, spiritual and intelligence quotient in quality of life of as person.

## **REVIEW OF LITERATURE**

### **INTELLIGENCE QUOTIENT**

The term IQ is originated by psychologist William Stern. It is the ability to understand, comprehend, plan think, and rationalise (Imlahi, 2015). It calculated as dividing mental age by chronological age. Intelligence quotient can be analysed as measured level of cognitive abilities i.e. problem solving and logical thinking (Villagonzalo, 2016). Sternberg (2006) stated triarchic theory of human intelligence. Components of triarchic theory are Analytic Intelligence, Creative Intelligence, and Practical Intelligence.

## **PROPOSITION I:**

Intelligence Quotient is positively related with quality of life.

IQ is influenced by numerous factors i.e. genetic, age, sleep, education, gender and environmental factors. Villagonzalo,(2016) stated new methods of factor analysis and concluded that there are two kinds of general intelligence that a person has from the genetic factors and environmental influences. Intelligence Quotient is concerned with spatial, visual, verbal, and mathematical skills. It shows the ability of someone in learning new things, focusing task and exercising, retaining and recalling objective information (Haji, 2013). Ghazi, et al. (2013) examined that malnutrition could also affects the general intelligence of a person Oommen (2014) concluded that intelligence Quotient is measured by various factors that may be both genetic and non-genetic factors which includes the environmental influence. Intelligence Quotient is a logical tool; its success depends upon how it is being used, what you use it for or channels it the right way/don't waste it. If you manage is effectively then yes, your chances to obtain a quality life (whatever that is to that particular person) is much higher.

## **EMOTIONAL QUOTIENT**

### **Emotional Quotient (EQ)**

In developing era its established by researches that Intelligence is not only a reason to reach a hight of success, people having emotional quotient also able to lead a success story .some people do not have rich in Intelligence quentiont but having strong Emotional quotient can easily get success. Goleman, Daniel (1998) referred to emotional intelligence as “the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well ourselves and in our relationships”. It describes abilities distinct from, but complementary to, academic intelligence, the purely cognitive capacities measured by IQ. Many people who are book smart but lack emotional intelligence end up working for people who have lower IQs than they but who excel in emotional intelligence skills.

Individuals with high EQ are often described as disciplined, warm-hearted, patient and positive. EQ is as a source of energy, information, relation and influence for human.EQ refers to a series of acquirable skills and qualifications that predicts positive results at home, family, workplace and society.

Individuals with high EQ are often described as disciplined, warm-hearted, patient and positive. A comprehensive theory of emotional intelligence was proposed in 1990 by two psychologists, Peter Salovey, at Yale, John Mayer, defining emotional intelligence in terms of being able to monitor and regulate one's own and others' feelings, and to use feelings to guide thought and action.

Goleman, Daniel has highlighted the following five emotional competencies (the term emotional competency includes both social and emotional competencies):-

**(a) Self-awareness:** Analyzing ability in any particular situation that how I will feel in the same situation, taking decision on the basis of that it's a feeling like realistic assessment.

**(b) Self-regulation:** Analyzing ability of emotions make efficient to self-regulator of one's emotions and give right direction to their emotions in getting their goal. They are able to manage emotional distress.



**(c) Motivation:** Emotions are one of the basic reasons of fault decision. but wining emotions and able to take a deliberate decision keep motivated.

**(d) Empathy:** Start to realizing, what people are feeling, being able to take their viewpoint, and create good understanding and attunement with a broad diversity of people.

**(e) Social skills:** Managing emotions in relationships well and truthfully, understanding social situations and networks; interacting efficiently; using these skills to take right decision and convince. Handling and managing disputes, for cooperation and teamwork.

Buck 1984; Ekman & Friesen, 1975; Nowicki & Mitchell, 1998, Scherer et al., 2001 reveals in his study that a person having sufficient emotional quotient can easily identify the emotions of others by facial and posture expression. It's like nonverbal communication.

Frijda, 1988; Lane et al., 1990; Ortony et al., 1988; Roseman, 1984 the ability to understand of emotion, having capacity to analyze the emotions, appreciate their probable trends over time, and understand their outcomes.

Further it is another characteristic as ability to turn the emotions towards thoughts. emotion is like a power but when its started to overflow a direction necessary to give him proper direction. Averill & Nunley, 1992; Gross 1998; Parrott, 2002 also found in their studies that the ability to manage emotion is also a characteristics of person have rich with Emotional quotient. it involves the rest of the personality in which emotion are managed in the context of an individual's goals, self-knowledge, and social awareness and an individual's ability to self-regulate emotions and to regulate emotions with others.

**PROPOSITION II:** Emotional Quotient is positively related with quality of life.

Goleman emphasized in his study that that emotional intelligence is not an innate in every individual instead in could be develop over time. Selman, et al. 2005 express that Emotional Quotient is a ability that measures non-cognitive aspects of a person and the capacity of a person to tolerate ambiguity, uncertainty, complexity and the ability to understand her/his once own emotion as well as understand the emotion of other people. Emotional intelligence seems to be in every domain. It has occurred as a crucial factor for achievement, retention and positive behavior as well as improving life success.

### **Spiritual Quotient**

It's a proven track that high intelligence quotient is always assist to get desired success in life further several studies reveals that people having less intelligence quotient but good in emotional quotient also can manage their work and life easily but what's about final destination ?is every person who is on the top of success, living happy life without any pain and sorrow. feeling pleasure and wearing pain with light heart only possible with a strong inner strength .High ambition generating stress at work place, increasing problem of work life balance, spending more time to earn and less to spend storing an unlimited strife towards life so many organization use to arrange counseling, Gymnasium, yoga, meditation, parties etc., but now there is time of spiritual inclination. Various authors have defined spirituality in their own way. Spirituality is an inseparable part of every employee (Campuzano and Seteroff, 2009). According to Mitroff and Denton, spirituality is "the basic feeling of an integration of self, others, and the entire universe. He started to understand the connection of entire system of world.why things are happened how its effected and related to each other.

Ashmos and Duchon (2000) explained spirituality in the context of how one indulges in community work and Benner (1989) believed that spirituality involves the process of establishing and maintaining a relationship with God. The spiritual leadership theory focused has on an integration of inner motivation relating it with perception, commitment towards the goal, true relationship with each other and a wave of spirituality. Spiritual leadership has become the most desirable trait in new age managers. Building a relationship of trust and respect creates positive environment and cooperation among coworker. Such a manager forms a team which is beyond money, promotions and benefits because they bind in spirit.

**Proposition III:** Spiritual Quotient is positively related with quality of life.

Danah (2000) explore that “SQ give an ability to discriminate between good and bad. It gives us our moral sense, an ability to temper rigid rules with understanding and compassion and an equal ability to see when compassion and understanding have their own limits”. Brewer, Mark, Dr. (2008) states on the basis of his analysis that “the spiritual intelligence is available to everyone but not found in active or explored status, only a handful of people ever take advantage of it.

Azizi & Zamaniyan (2013) Spiritual quotient augment the ability by which a person able to understand evident and represent spiritual resources and spent their life in the guidance of truth. Selman et al (2005) express that In short, it is more on intuitive abilities and self-awareness It’s enhance the ability of intuition .as well as a person able to understand that what is the real meaning of their existence. Spiritual quotient is genetic capability of the human brain, based on constructions in the brain that provides basic ability to form meanings, values, and beliefs in the first place; it means that, spiritual intelligence is “the soul’s intelligence and improve quality of life (Haji, 2013).

## CONCLUSION

In present research work focused on spiritual, intelligence, emotional quotient and their significant contribution in quality of life. Intelligence Quotient is a logical tool; its success depends upon how it is being used, what you use it for or channels it the right way/don't waste it. If you manage is effectively then yes, your chances to obtain a quality life (whatever that is to that particular person) is much higher. Emotional intelligence seems to be in every domain. It has occurred as a crucial factor for achievement, retention and positive behavior as well as improving life success. The knowledge gained through the present paper will be helpful in understanding the elements of quality of life and also the role of these elements in shaping quality of life will be known.

## REFERENCES

- Aertsens, J., Mondelaers, K., Verbeke, W., Buysse, J., & Huylenbroeck, G. Van. (2011). the influence of subjective and objective knowledge on attitude, motivations and consumption of organic food. *British Food Journal*, 113(11), 1353–1378. <https://doi.org/10.1108/00070701111179988>
- Aertsens, J., Verbeke, W., Mondelaers, K., & Huylenbroeck, G. Van. (2009). Personal determinants of organic food consumption: a review. *British Food Journal*, 111(10), 1140–1167. <https://doi.org/10.1108/00070700910992961>
- Ahmad, S. N. B., & Juhdi, N. (2010). Organic Food : A Study on Demographic Characteristics and Factors Influencing Purchase Intentions among Consumers in Klang Valley, Malaysia.

*International Journal of Business and Management*, 5(2), 105–118.

<https://doi.org/10.5539/ijbm.v5n2p105>

Ahuja, A. (2015). Impact of Emotional , Cognitive & Spiritual Intelligence on Quality of Life : Giving Inner Peace Cognitive / Intellectuall Intelligence ( IQ ) Emotional Intelligence ( EQ ), 5(6), 196–203.

Al-Swidi, A. (2014). The role of subjective norms in theory of planned behavior in the context of organic food consumption. *British Food Journal*, 116(10), 1561–1580. <https://doi.org/10.1108/BFJ-05-2013-0105>

BembySoebyakto, B., & Wei Ming, C. (2012).An Empirical Testing of Intelligence, Emotional and Spiritual Quotients Quality of Managers using Structural Equation Modeling.*International Journal of Independent Research and Studies*, 1(1), 1–12. Retrieved from <http://ssrn.com/abstract=2152029%5Cnwww.aiars.org/ijirs>

Bigelow, D. A., Olson, M. M., Smoyer, S., & Stewart, L. (n.d.). Quality of life questionnaire.*Quality*, 33.

Charoenung, T., Nimpitakpong, P., Chaijinda, K., &Jedsadayamata, A. (2012). Development of a Questionnaire Based on The Theory of Planned Behavior to Identify Factors Affecting Pharmacists' Intention to Consult Physicians on Drug-Related Problems. *Ist Mae FahLuang University International Conference 2012*, 1–7.

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers and Education*, 59(3), 1054–1064. <https://doi.org/10.1016/j.compedu.2012.04.015>

Cheung, R., Lau, M. M., & Lam, A. Y. C. (2015). Factors affecting consumer attitude towards organic food: an empirical study in Hong Kong. *Journal of Global Scholars of Marketing Science*, 25(3), 216–231. <https://doi.org/10.1080/21639159.2015.1041782>

Consumer Insights for Organic food Market : A Delhi-NCR study. (2016), (July 2013).

Dargahi, H. (2017). Relationship Between Spiritual Quotient and Transformational Leadership of Managers with Organizational Commitment of Staffs: A Case Study in the Tehran University of Medical Sciences in Iran. *Review of Public Administration and Management*, 5(2). <https://doi.org/10.4172/2315-7844.1000210>

Dean, M., Raats, M. M., & Shepherd, R. (2008). Moral concerns and consumer choice of fresh and processed organic foods. *Journal of Applied Social Psychology*, 38(8), 2088–2107. <https://doi.org/10.1111/j.1559-1816.2008.00382.x>

Dean, M., Raats, M. M., & Shepherd, R. (2008). Moral concerns and consumer choice of fresh and processed organic foods. *Journal of Applied Social Psychology*, 38(8), 2088–2107. <https://doi.org/10.1111/j.1559-1816.2008.00382.x>

Dean, M., Raats, M. M., & Shepherd, R. (2012).The Role of Self-Identity, Past Behavior, and Their Interaction in Predicting Intention to Purchase Fresh and Processed Organic Food.*Journal of Applied Social Psychology*, 42(3), 669–688. <https://doi.org/10.1111/j.1559-1816.2011.00796.x>

Dickinson, D., *Learning Through Many Kinds of Intelligence*, Learning Through the Multiple Intelligences, 1999.

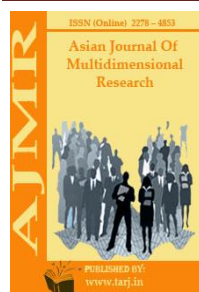
- Dr.V.Selvam, U. ., (2016). Factors Hindering towards Purchase of organic Food Products.*IOSR Journal of Humanities and Social Science*, 21(7), 92–96. <https://doi.org/10.9790/0837-2107089296>
- Fallah, V., Khosroabadi, S., &Usefi, H. (2015). Development of Emotional Quotient and Spiritual Quotient: The Strategy of Ethics Development. *International Letters of Social and Humanistic Sciences*, 49, 43–52. <https://doi.org/10.18052/www.scipress.com/ILSHS.49.43>
- Gomathi, M., &Kalyani, S. (2013). A Study on Awareness on Organic Food Products Among General Public in Erode City, Tamilnadu, India. *Indian Journal Of Applied Research*, 3(12), 277–279.
- Gotschi, E., Vogel, S., Lindenthal, T., &Larcher, M. (2009). The Role of Knowledge, Social Norms, and Attitudes Toward Organic Products and Shopping Behavior: Survey Results from High School Students in Vienna. *The Journal of Environmental Education*, 41(2), 88–100. <https://doi.org/10.1080/00958960903295225>
- Gupta, S. (2014). Code of Professional Ethics : An Empirical Study of Professional Code of Ethics among Professional Educators, 3(1), 21–24.
- Haji, J., Bemby, A., Sentosa, I. (2013).The Intelligence, Emotional, Spiritual Quotients and Quality ofManagers. Retrieved September 7, 2015
- Imlahi, H. (2015). *Intelligence quotient and its environmental factors in children*. Al Akhawayn University, Morocco.
- Jafari, H., Mohammadi, E., Ahmadi, F., &Kazem-, A. (2014).Designing and psychometric the measure for determining the professional competence of nursing faculty members, 1(2), 8–13.
- Johe, M. H., &Bhullar, N. (2016). To buy or not to buy: The roles of self-identity, attitudes, perceived behavioral control and norms in organic consumerism. *Ecological Economics*, 128, 99–105. <https://doi.org/10.1016/j.ecolecon.2016.02.019>
- Kalyanasundaram, K., &Balasubramanian, P. (n.d.). Effect of Spirituality on Human Performance -A Myth or Reality?,VII(1).
- Kurnia, P., Sun, X., & Collins, R. (2013). Consumers perceptions towards organic food in Yogyakarta, Indonesia. *ActaHorticulturae*, 1006, 185–192.
- Majumdar, P. S., Swain, S. C., & Dean, A. (2015). Identification and Analysis of Factors Influencing Preferences for Green Products : A Study In and Around Kolkata ( India ), 1(9), 36–49.
- Malik, M. S., & Tariq, S. (2016). Impact of Spiritual Intelligence on Organizational Performance.*International Review of Management and Marketing*, 6(2), 289–297.
- Marsuki, &Kembaren, L. S. (2015). Affecting Factors on the Performance Quality of Educational Staff in University of Brawijaya. *Human Resource Management Research*, 5(5), 116–123. <https://doi.org/10.5923/j.hrmr.20150505.02>
- Mason-Jones D.R., R. and T. (1999). Article information : *Int J Logistics Management*. <https://doi.org/10.1108/09574090910954864>

- Masoom, B., An, M. I., I, M. R. E., & I, S. E. (2015). Survey the effect of organizational Quotient and Spiritual Quotient on performance of employees in Yazd Social Security Medical Management Organization, 36.
- Massam, B. R. (2002). Quality of life: Public planning and private living. *Progress in Planning*, 58, 141-227.
- Maynard-moody, S., Harris, B., & Burrell, D. (2000). Demands For Local And Organic Produce: A Brief Review Of The Literature, (254), 1-57. Retrieved from [http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&ved=0CEsQFjAF&url=http://www.ku.edu/pri/resrep/pdf/m254A.pdf&ei=qWUBU8O7B\\_GXiAeF5YC4Cg&usg=AFQjCNGDOTTf28aRPivpoERcU6aPvKzag&bvm=bv.61535280,d.aGc](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&ved=0CEsQFjAF&url=http://www.ku.edu/pri/resrep/pdf/m254A.pdf&ei=qWUBU8O7B_GXiAeF5YC4Cg&usg=AFQjCNGDOTTf28aRPivpoERcU6aPvKzag&bvm=bv.61535280,d.aGc)
- McGaghie, W. C. (1991). Professional Competence. *Educational Researcher*, 20(1), 3-9. <https://doi.org/10.1504/IJHTM.2002.001137>
- Moreno-Murcia, J. A., SilveiraTorregrosa, Y., & BelandoPedreño, N. (2015). Questionnaire evaluating teaching competencies in the university environment. Evaluation of teaching competencies in the university. *Journal of New Approaches in Educational Research*, 4(1), 54-61. <https://doi.org/10.7821/naer.2015.1.106>
- Muhummad, S., Fathelrahman, E., & Ullah, R. U. T. (2016). The significance of consumer's awareness about organic food products in the United Arab Emirates. *Sustainability (Switzerland)*, 8(9). <https://doi.org/10.3390/su8090833>
- Oommen, A. (2014). Factors Affecting Intelligence Quotient. Retrieved September 7, 2015.
- Persson, A. (2013). Determinants of sustainable food consumption-Moving consumers down the path of sustainability by understanding their behavior, 1-25. Retrieved from <https://130.241.16.4/handle/2077/33445>
- Research on Consumers Willingness To Pay for. (2013), (April).
- Saravi, F. K., Saravi, A., Rigi, S., & Montazeri A. (2012). Comparing Health-Related Quality of Life of Employed Women and Housewives: A Cross Sectional Study From Southeast Iran. *BMC Women's Health*, 12(1), 41.
- Sathyendra Kumar, A. D., & Chandrashekar, H. M. (2015). A study on consumers behavior towards organic food products in Mysore city. *International Journal of Management Research & Review*, 5(11), 1082-1091. Retrieved from [http://ijmrr.com/view\\_journal.asp](http://ijmrr.com/view_journal.asp)
- Selman, V., Selman, R. C., Selman, J., Era, Q., Selman, E., & Consultant, S. (2005). Spiritual-Intelligence/-Quotient. *College Teaching Methods & Styles Journal*, 1(3), 23-31.
- Sen, C., & Yadav, L. (2016). Relationship between Spiritual Quotient and Managerial Effectiveness: A Study on Managers. *International Journal of Science and Research*, 5(7), 2319-7064. <https://doi.org/10.21275/v5i7.ART2016311>
- Smith, S., & Paladino, A. (2010). Eating clean and green? Investigating consumer motivations towards the purchase of organic food. *Australasian Marketing Journal*, 18(2), 93-104. <https://doi.org/10.1016/j.ausmj.2010.01.001>
- Sternberg, R. (2006). *Cognitive Psychology – Fourth Edition*. Thomson Wadsworth



- Suganya, M. S. S., & Nadu, T. (2014). Analysis Of Consumers ' Preference Towards Organic Food Products Based On Product Price, 3(12), 2012–2015.
- Sukhdev, S. (2016). Relationship between Spiritual Quotient and Personal Competence of Employees : An Empirical Investigation, 5(9), 9–11.
- SukhwinderKaur, S. S. & B. S. B. (2016). Exploring Relationship Among Spiritual Quotient, Feeling of Oneness and Job Satisfaction of Employees: an Empirical Study. *International Journal of Human Resources Management (IJHRM)* , 5(4), 1–12. Retrieved from [http://www.iaset.us/view\\_archives.php?year=2016&jtype=2&id=34&details=archives](http://www.iaset.us/view_archives.php?year=2016&jtype=2&id=34&details=archives)
- Szalai, A., & Andrew, F. (1980). *The Quality of life: comparative studies / edited by*. Paper presented at the Conference Proceedings editio, London ; Beverly Hills.
- Urban, J. A. N., Zvěřinová, I. V. A., & Ščasný, M. (2012). What motivates czech consumers to buy organic food? *SociologickyCasopis*, 48(3), 509–536. <https://doi.org/http://www.jstor.org/stable/23535000>
- Vidyapeeth, B. (2017). Indian Consumers and Organic Products, 6(1), 91–101.
- Villagonzalo, R. R. (2015). Intelligence Quotient, Emotional Quotient, Spiritual Quotient, and Adversity Quotient® and the Academic Performance of Students. *Statewide Agricultural Land Use Baseline 2015*, 1(March). <https://doi.org/10.1017/CBO9781107415324.004>
- Villagonzalo, R. R. (2016). *Intelligence Quotient, Emotional Quotient, Spiritual Quotient And Adversity Quotient® and the Academic Performance of Students*. St. Alexius College, City of Koronadal.
- Voon, J. P., Sing, K., Agrawal, A., Voona<sup>①</sup>, J., Nguib, K., & Agrawal, a. (2011). Determinants of willingness to purchase organic food: An exploratory study using structural equation modeling. *International Food and Agribusiness Management Review*, 14(2), 8. Retrieved from <http://www.ifama.org/files/14i2.pdf#page=109>
- WHO. (2004). The WHO Cross-National Study of Health Behavior in School-Aged Children from 35 Countries: Findings from 2001-2002. *Journal of School Health*, 74, 204-206.
- Yadav, R., & Pathak, G. S. (2016). Intention to purchase organic food among young consumers: Evidences from a developing nation. *Appetite*, 96, 122–128. <https://doi.org/10.1016/j.appet.2015.09.017>
- Yadav, R., & Pathak, G. S. (2017). Determinants of Consumers' Green Purchase Behavior in a Developing Nation: Applying and Extending the Theory of Planned Behavior. *Ecological Economics*, 134, 114–122. <https://doi.org/10.1016/j.ecolecon.2016.12.019>
- Yazdanpanah, M., & Forouzani, M. (2015). Application of the Theory of Planned Behaviour to predict Iranian students' intention to purchase organic food. *Journal of Cleaner Production*, 107, 342–352. <https://doi.org/10.1016/j.jclepro.2015.02.071>
- Zagata, L. (2012). Consumers' beliefs and behavioural intentions towards organic food. Evidence from the Czech Republic. *Appetite*, 59(1), 81–89. <https://doi.org/10.1016/j.appet.2012.03.023>





## IMPACT OF INTEGRATED NUTRIENT AND PEST MANAGEMENT SYSTEM THROUGH ORGANIC FARMING IN THE TRADITIONAL RICE VARIETIES

K. Ahilandeswari\*; N. Uma Maheswari\*\*

\*Asst. Professor,  
Department of Microbiology,  
Sengamala Thayaar Educational,  
Trust Women's College, Sundarakkottai,  
Tamil Nadu, INDIA.  
Email id: ahilamicro23@gmail.com

\*\*Assistant Professor,  
Sengamala Thayaar Educational,  
Trust Womens College Mannargudi,  
Tamil Nadu, INDIA.  
Email id: umasamyamf@gmail.com

### ABSTRACT

*The effect of an organic fertilizer and biofertilizers on the growth of young seedlings of the traditional rice varieties varying with maturation period was studied and compared with modern rice varieties. Integrated nutrient and pest management practices are accepted as eco friendly technology. The principle benefits of this technique include improved environmental conditions and healthier cropping systems and a strategy towards the sustainable agricultural practices. The primary objective of this study is to examine the impact of integrated nutrient and pest management practices in the traditional rice varieties through organic farming with different traditional organic fertilizers such as 'Beejamrutha', 'Jeevamrutha', 'Panchakavya', and biofertilizers. Field trials were conducted with these fertilizers and growth of the young seedlings was assessed with normal chemical based cultivation procedure at different stages of growth. Effect of these fertilizers on the Root and Shoot length, pest attack and disease incidence was determined. Larvicidal activity of these fertilizers were studied and compared with chemical fertilizers. The result showed minimum occurrence of pest attack and disease incidence in response to organic fertilizer treatment in young seedlings when compared to chemical based*

*treatment and modern rice varieties. Thus integrated nutrient and pest management system proves to be eco friendly sustainable agriculture practices and the results are discussed.*

**KEYWORDS:** *Traditional Rice Varieties; Organic Farming; 'Beejamrutha'; 'Jeevamrutha'; 'Panchakavya'.*

---

## **INTRODUCTION**

Natural farming or organic farming is gaining importance in view of sustained agriculture and maintaining ecological balance. It is a simple principle of utilizing cheap and local inputs with zero utilization of chemicals in any form like fertilizer, herbicide, pesticide, antibiotic, hormone, etc. Apart from using conventional farm based products there is an increasing demand for improvised materials like 'Beejamrutha', 'Jeevamrutha', 'Panchagavya', etc. which not only enrich the soil with beneficial micro organisms but also decrease the incidence of diseases in many crops. The organic agriculture improves soil production capacity, soil biological cycles and biological activity which contribute to the sustainable agricultural production (Reganold et al., 1993; Letourneau and Goldstein, 2001;

To promote organic agriculture system Government of India launched National Programme for Organic Production (NPOP) in the year 2001. NPOP defined the standards, accreditation procedures and established a credible certification system which is now well established nationally and internationally. The standard followed and adopted for the assessment and certification by NPOP for organic agriculture production system have been recognized and accepted by the European Commission, Switzerland and United State Department of Agriculture (USDA). For promotion of organic farming, National Centre of Organic Farming (NCOF) was established in the year 2004 at Ghaziabad (Headquarter), Uttar Pradesh with its six regional centers located at Bangalore, Nagpur, Jabalpur, Bhubaneswar, Panchkula and Imphal.

Integrated Pest Management (IPM) is an effective and environmental friendly approach to pest management. Sustainable and effective agricultural pest management techniques are important to the continued development of alternative pest management strategies (Pretty and Bharucha, 2015). IPM techniques protect the natural enemies of insect pests and aid in the restoration of ecosystem activities (Kabir and Rainis, 2015).

'Beejamrutha', 'Jeevamrutha', and 'Panchakavya' are the low cost improvised preparation that enriches the soil with indigenous microorganisms and restore soil natural diversity. They are prepared from native cow's urine, dung, and some natural organic ingredients. They enrich the plant growth by providing essential nutrients and control the pest and disease incidences in plants. 'Panchagavya' is a traditional method used to safeguard plants and soil microbes and to increase plant production. This shows beneficial effects on a variety of crops (Natarajan, 2003).

Two hundred and sixty-six insect species have been identified in the rice ecosystems. These insects form a complex food web within the rice ecosystem (Srivastava et al., 2004). In the rice agro ecosystem insect pest species can be categorized as minor and major pests. These pests cause severe damage to rice crops at different stages of growth. The degree of damage is dependent on the growing season and surrounding environment (Khaliq et al., 2014). Hence this present study was planned to manage pest attack in rice crop through integrated nutrient and pest

management practices such as organic farming and transplanting young single seedling of 15 days old that could ensure the crop to resistant against pest attack and high yield.

## **MATERIALS AND METHODS**

### ***Preparation of organic fertilizers***

Organic fertilizers namely 'Beejamrutha', 'Jeevamrutha', and 'Panchakavya' for rice cultivation were prepared by using cow dung, cow urine and waste materials in plastic cane and pots. Materials for fertilizers were collected from animal shed and local market. 'Beejavamrutha' was prepared by soaking 1 Kg of local cow dung in 4 litres of water and 10 g of lime in one litre water overnight. Next day morning the cow dung was filtered into the lime soaked water, 2 liters of local cow urine was added and stirred thoroughly. This preparation was allowed for 24 hours for growth of microbial population and kept under shade (Devakumar et al., 2014).

'Panchagavya' was prepared by using five products of cow namely cow dung (5kg), cow urine (3l), milk (2l), curd (2l), ghee (500g) with combination of jaggery (250 g), banana (12 Nos.), tender coconut (3l), and water (3l). 5kg of fresh cow dung was taken and mixed thoroughly with 500g of cow's ghee and kept for 4 days in a plastic drum or pot, and mixed twice a day. On the 5<sup>th</sup> day remaining ingredients were added and kept it for 15. On the 19<sup>th</sup> day 'Panchagavya' solution was ready and it was stored in a wide-mouthed earthen pot or concrete tank in open and under shade. Sufficient shade is usually provided. It was diluted by taking 1liter of the 'Panchagavya' solution was mixed with 10 liter of water, and then used for application (Punitha et al., 2010).

'Jeevamrutha' was prepared by mixing 10 kg cow dung, 10 liters cow urine, 2 kg jaggary, 2 kg pulse flour with 200 liters water and kept for one week incubation. Continuous mixing is necessary for better nutrient mobilization and growth of microbial population. Biofertilizers such as *Azospirillum* and *Pseudomonas* were obtained from Biominin Laboratories; STET Biofloral products Development and Research Centre, Sundarakkottai, Mannargudi, Tamil Nadu to analyze their effect in rice seedlings.

### ***Analytical studies of organic fertilizer***

Nutrient content and microbial population of these organic fertilizers were analyzed on the first day and after preparation at regular interval. Microbes present in cow dung and urine generally increases in a day after preparation. So, microbial populations namely bacteria, fungi and actinomycetes were tested through plating techniques and CFU were determined. When microbial populations reached their optimum growth they were used for field application.

### ***Preparation of nursery field***

Field experiment was conducted to test the efficacy of different organic fertilizers individually and in combinations. The field area for experiment was selected near S.T.E.T. herbal garden. The traditional Indian rice varieties 'Sivappu Kowni', 'Seeraga Samba' and modern rice variety ADT 37 were selected for field study involving organic cultivation. Size of the each plot was 12 (4×3) Square meter. Further it is divided into 3 rows for 3 rice varieties and the rows are divided into 10 equal plots for 10 treatments. Totally there are 30 treatments were planned. Thin polythene sheets were placed at the bottom and sand was spread over the sheet and a layer of 5 cm of soil was added. Each treatment was separated using bricks and proper leveling was made.

***Field experiment***

There were 10 treatments which included

T1: 'Beejamrutha'

T2: 'Jeevamrutha'

T3: 'Panchakavya'

T4: Biofertilizer

T5: Chemical fertilizer

T6: 'Beejamrutha' + 'Jeevamrutha'

T7: 'Panchakavya' + 'Jeevamrutha'

T8: 'Beejamrutha' + 'Jeevamrutha' + Chemical fertilizer

T9: 'Panchakavya' + 'Jeevamrutha' + Chemical fertilizer

T10: Control

Certified rice seed varieties were purchased from Sri Agowri Amman seed store, Thanjavur, Tamil Nadu. Seeds were soaked in water overnight and kept under shade for 12 hours and treated with the fertilizers and sown in the trial plots separately. Before that, 'Beejamrutha', 'Panchakavya' and biofertilizers were applied through seed treatment. 'Jeevamrutha' was applied as foliar spray in the nursery at every 5 day intervals. Chemical fertilizers were applied as basal in recommended dose. No chemical pesticide of any kind was used in the field during the whole period of cultivation. Then plant growth was monitored carefully and proper irrigation was maintained.

***Pest and diseases***

The pest and disease control ability of these fertilizers were monitored. The presence of most common harmful pests of paddy like stem borer, gall midge, brown planthopper, white backed planthopper, green leafhopper, leaf folder case worm and gundhi bugs were observed continuously. The presence of common microbial diseases of paddy like blast, brown spot, bacterial leaf blight, sheath blight and sheath rot were carefully observed in the plant to analyze the effect of these organic fertilizers on disease control.

***Phytotoxicity and Vigour Index***

Plant growth parameters such as root and shoot lengths were measured on 10<sup>th</sup> and 15<sup>th</sup> day. Percentage Phytotoxicity and vigour index were calculated on the basis of shoot length by the following formula (Ahilandeswari and Vetriselvi, 2012; Abdul Baki, 1973).

$$\text{Phytotoxicity (\%)} = \frac{\text{Shoot/Root length in control} - \text{Shoot/Root length in treatment}}{\text{Shoot/Root length in control}} \times 100$$

$$\text{Vigour Index} = \% \text{ of Germination} \times \text{Length of Seedling}$$

## RESULTS

The effect of organic fertilizers on the growth of young seedlings was observed in terms of shoot and root length of plant in 10<sup>th</sup> and 15<sup>th</sup> day of sowing. Pest and disease management were made by means of monitoring pest and disease occurrence, color of leaf and compared with control.

There was no phytotoxicity observed in the plant treated with the organic fertilizers. Phytotoxicity evaluation showed negative values, which indicate the positive impact of these fertilizers on the plant growth. 100 percent germination was observed in all treatment. When compared to control, organic fertilizers treated rice showed better length of seedlings.

The seedling growth of paddy treated with chemical based fertilizers showed more or less similar results. Length of the seedlings was relatively high in both of the two rice varieties. Especially, 'Sivappu Kowni' showed comparatively higher growth in response to the treatment of organic fertilizers. Pest populations were monitored in both younger and old seedlings. It was found that organic farming practices showed better results in management of pests and microbial diseases when treated with organic fertilizers. Similarly pest and disease attack in the younger seedlings were less than older seedlings. For complete analysis of these organic nutrients, field transplantation is planned to be conducted the experimentation plot in S.T.E.T. Herbal Garden, Sundarakkottai, Thiruvarur Dt. Analysis of the results showed that the cost of application of chemical fertilizers in rice varieties was more when compared to cost of application of 'Beejamrutha', 'Jeevamrutha', 'Panchakavya' and Biofertilizers.

**TABLE 1 SEEDLING GROWTH OF RICE VARIETIES IN 10<sup>TH</sup> DAY**

| Treatment   | 'Sivappu Kowni'   |                  | 'Seeraka Samba'   |                  | ADT 37            |                  |
|---|-------------------|------------------|-------------------|------------------|-------------------|------------------|
|   | Shoot length (Cm) | Root length (Cm) | Shoot length (Cm) | Root length (Cm) | Shoot length (Cm) | Root length (Cm) |
| T1: Beejamrutha                                     | 8.4               | 5.2              | 7.3               | 5.3              | 8.1               | 5.2              |
| T2: Jeevamrutha                                     | 8.4               | 5.2              | 7.3               | 5.3              | 8.3               | 5.4              |
| T3: Panchakavya                                     | 8.4               | 5.3              | 7.4               | 5.1              | 8.2               | 5.3              |
| T4: Biofertilizer                                   | 8.3               | 5.1              | 7.4               | 4.9              | 8.0               | 5.2              |
| T5: Chemical fertilizer                             | 8.3               | 5.2              | 7.6               | 4.8              | 8.3               | 5.3              |
| T6: Beejamrutha + Jeevamrutha                       | 8.4               | 5.3              | 7.4               | 5.3              | 8.4               | 5.4              |
| T7: Panchakavya + Jeevamrutha                       | 8.4               | 5.3              | 7.3               | 5.0              | 8.3               | 5.6              |
| T8: Beejamrutha + Jeevamrutha + Chemical fertilizer | 8.5               | 5.4              | 7.4               | 5.1              | 8.4               | 5.6              |
| T9: Panchakavya + Jeevamrutha + Chemical fertilizer | 8.6               | 5.3              | 7.4               | 5.3              | 8.4               | 5.3              |
| T10: Control  | 8.3               | 5.2              | 7.2               | 5.0              | 8.0               | 5.2              |

Data are the mean of three replicates

**TABLE 2 SEEDLING GROWTHS OF RICE VARIETIES IN 15<sup>TH</sup> DAY**

| Treatment   | 'Sivappu Kowni'   |                  | 'Seeraka Samba'   |                  | ADT 37            |                  |
|---|-------------------|------------------|-------------------|------------------|-------------------|------------------|
|   | Shoot length (Cm) | Root length (Cm) | Shoot length (Cm) | Root length (Cm) | Shoot length (Cm) | Root length (Cm) |
| T1: Beejamrutha                                     | 13.7              | 8.2              | 12.5              | 7.4              | 13.6              | 8.0              |
| T2: Jeevamrutha                                     | 13.8              | 8.4              | 12.4              | 7.3              | 13.7              | 8.3              |
| T3: Panchakavya                                     | 13.7              | 7.7              | 12.4              | 7.2              | 13.8              | 8.6              |
| T4: Biofertilizer                                   | 14.0              | 8.0              | 12.4              | 7.6              | 13.9              | 8.3              |
| T5: Chemical fertilizer                             | 14.2              | 8.6              | 12.6              | 7.3              | 13.9              | 8.4              |
| T6: Beejamrutha + Jeevamrutha                       | 14.2              | 8.8              | 12.5              | 7.3              | 14.0              | 8.6              |
| T7: Panchakavya + Jeevamrutha                       | 14.1              | 8.6              | 12.4              | 7.1              | 14.0              | 8.3              |
| T8: Beejamrutha + Jeevamrutha + Chemical fertilizer | 14.2              | 8.7              | 12.6              | 7.2              | 14.1              | 8.6              |
| T9: Panchakavya + Jeevamrutha + Chemical fertilizer | 14.3              | 8.8              | 12.5              | 7.1              | 14.0              | 8.7              |
| T10: Control  | 13.7              | 8.3              | 12.4              | 7.0              | 13.6              | 8.2              |

Data are the mean of three replicates

**TABLE 3 PHYTOTOXICITY AND VIGOR INDEX EVALUATION IN 10<sup>TH</sup> DAY**

| Treatment   | 'Sivappu Kowni'   |             | 'Seeraka Samba'   |             | ADT 37            |             |
|---|-------------------|-------------|-------------------|-------------|-------------------|-------------|
|   | Phytotoxicity (%) | Vigor index | Phytotoxicity (%) | Vigor index | Phytotoxicity (%) | Vigor index |
| T1: Beejamrutha                                     | -1.20             | 1360        | -1.38             | 1260        | -1.25             | 1330        |
| T2: Jeevamrutha                                     | -1.20             | 1360        | -1.38             | 1260        | -3.75             | 1370        |
| T3: Panchakavya                                     | -1.20             | 1370        | -2.77             | 1250        | -2.5              | 1350        |
| T4: Biofertilizer                                   | 0                 | 1340        | -2.77             | 1230        | 0                 | 1320        |
| T5: Chemical fertilizer                             | 0                 | 1350        | -5.55             | 1240        | -3.75             | 1360        |
| T6: Beejamrutha + Jeevamrutha                       | -1.20             | 1370        | -2.77             | 1270        | -5.0              | 1380        |
| T7: Panchakavya + Jeevamrutha                       | -1.20             | 1370        | -1.38             | 1230        | -3.75             | 1390        |
| T8: Beejamrutha + Jeevamrutha + Chemical fertilizer | -2.40             | 1390        | -2.77             | 1250        | -5.0              | 1400        |
| T9: Panchakavya + Jeevamrutha + Chemical fertilizer | -3.61             | 1390        | -2.77             | 1270        | -5.0              | 1370        |
| T10: Control  | 0                 | 1350        | 0                 | 1220        | 0                 | 1320        |



**TABLE 4 PHYTOTOXICITY AND VIGOR INDEX EVALUATION IN 15<sup>TH</sup> DAY**

| Treatment   | 'Sivappu Kowni'   |             | 'Seeraka Samba'   |             | ADT 37            |             |
|---|-------------------|-------------|-------------------|-------------|-------------------|-------------|
|   | Phytotoxicity (%) | Vigor index | Phytotoxicity (%) | Vigor index | Phytotoxicity (%) | Vigor index |
| T1: Beejamrutha                                     | 0                 | 2190        | -0.80             | 1990        | 0                 | 2160        |
| T2: Jeevamrutha                                     | -0.72             | 2220        | 0                 | 1970        | -0.73             | 2200        |
| T3: Panchakavya                                     | 0                 | 2140        | 0                 | 1960        | -1.47             | 2240        |
| T4: Biofertilizer                                   | -2.18             | 2200        | 0                 | 2000        | -2.20             | 2220        |
| T5: Chemical fertilizer                             | -3.64             | 2280        | -1.61             | 1990        | -2.20             | 2230        |
| T6: Beejamrutha + Jeevamrutha                       | -3.64             | 2300        | -0.80             | 1980        | -2.94             | 2260        |
| T7: Panchakavya + Jeevamrutha                       | -2.91             | 2270        | 0                 | 1950        | -2.94             | 2230        |
| T8: Beejamrutha + Jeevamrutha + Chemical fertilizer | -3.64             | 2290        | -1.61             | 1980        | -3.67             | 2270        |
| T9: Panchakavya + Jeevamrutha + Chemical fertilizer | -4.37             | 2310        | -0.80             | 1960        | -2.94             | 2270        |
| T10: Control  | 0                 | 2200        | 0                 | 1940        | 0                 | 2180        |

## DISCUSSION

Beejamrutha and Jeevamrutha were found to have higher number of beneficial microorganisms. The presence of beneficial microorganisms is mainly due to their natural constituents. The beneficial effects of Jeevamrutha reported by Palekar (2006), Vasanthkumar (2006) and Devakumar et al., (2008) was attributed to higher microbial load and growth hormones which might have enhanced the soil biomass thereby sustaining the availability and uptake of applied as well as native soil nutrients which ultimately resulted in better growth and yield of crops.

In this present study, significant variation in seedling length of paddy was noted due to variations in treatment. Among the treatments, organic fertilizers treated rice seedlings showed higher length and seedling vigour index. Seedling length and seedling vigor index was noticeably lower in control. Natarajan (2007) reported that the Panchagavya contains macronutrients like N, P and K, essential micronutrients, many vitamins, essential amino acids, growth promoting factors like IAA, GA, which may provide nutrition to rhizosphere microorganisms and thus help to increase their population.

The principle benefits of this technique include improved environmental conditions and healthier cropping systems. Also chemical pesticides are adversely affecting the human health. Pesticides can enter human body and cause severe diseases. Moreover, pesticides also bring a lot of issues to the people who digest the chemical fertilizers, for example, skin cancer, or effect on the growth of a baby (Yong, 1994). The study shows that replacement of chemical fertilizers by organic fertilizer is a better option in cultivation of traditional rice varieties. These results also suggest that improvised natural methods in cultivation of rice gave better yield than the conventional chemical farming.

## CONCLUSION

Farmers need less money if they prepare and use soil friendly preparations like 'Beejamrutha', 'Jeevamrutha' and 'Panchakavya'. There is an increasing awareness in the farmers regarding use of these supplements. The governments and other agricultural agencies may promote usage of these supplements by providing Nutrient Based Subsidy to the farmers directly and encouraging the breeding of native cows suitable for Indian Agriculture.

It is widely accepted that the chemical pesticides and chemical fertilizers adversely affect the soil water and animal including human health. Hence, the organic fertilizers such as 'Beejamrutha', 'Jeevamrutha' and 'Panchakavya' become eco friendly and support the sustainable agriculture. Besides, they are proved to be cost effective and maintain the population of soil microorganisms as well as soil fertility.

## ACKNOWLEDGEMENT

The authors are thankful to Dr. V. Dhivaharan, Correspondent, S.T.E.T. Women's College, Sundarakkottai, Mannargudi for his keen interest and constant encouragement.

## REFERENCES

- Abdul-Baki, A.A., Anderson, J.D., 1973. Vigour determination in soybean seed by multiple criteria. *Crop Sci.* **13**, 630-633.
- Ahilandeswari, K., Vetrivelvi, J., 2012. Studies on Effective Microorganisms grown in coconut water and their effect on paddy (*Oryza sativa* L.), *Res. Environ. Life Sci.* **5(3)**, 129-132.
- Devakumar, N., Rao, G. G. E., Shubha, S., Imrankhan, Nagaraj, Gowda, S. B., 2008. Activities of Organic Farming Research Centre. Navile, Shimoga, Univ. Agri. Sci., Bangalore, Karnataka.
- Devakumar, N., Shubha, S., Gouder, S.B., Rao, G.G.E., 2014. Microbial analytical studies of traditional organic preparations beejamrutha and jeevamrutha, Proceedings of the 4<sup>th</sup> ISOFAR Scientific Conference. 'Building Organic Bridges', at the Organic World Congress 2014, 13-15 Oct. Istanbul, Turkey (eprint ID 23621) 639.
- Kabir, M.H., Rainis, R., 2015. "Do farmers not widely adopt environmentally friendly technologies? Lesson from Integrated Pest Management (IPM)". *Modern Applied Science.* **9 (3)**, 208-215.
- Khaliq, A., Javed, M., Sohail, M., Sagheer, M., 2014. "Environmental effects on insects and their population dynamics". *Journal of Entomology and Zoology Studies.* **2(2)**, 1-7.
- Letourneau, D.K., Goldstein, B., 2001. Pest damage and arthropod community structure in organic vs conventional tomato production in California. *Journal of Applied Ecology.* **38(3)**, 557-570.
- Natarajan, K., 2003. Panchakavya – A Manual, Other Indian press, Goal, India, 32
- Natarajan, K., 2007. Panchagavya for plant. Proc. Nation. Conf. on Glory of Gomatha, Dec. 1- 3, S. V. Veterinary Uni, Tirupati, A. P., 72-75.
- Palekar, S., 2006. Shoonya bandovalada naisargika krushi pub. Swamy Anand. Agri Prakashana. Bangalore.

Pretty, J., Bharucha, Z.P., 2015. “Integrated Pest Management for sustainable intensification of agriculture in Asia and Africa”. *Insects*. **6** (1),152–182.

Punitha, S., Balamurugan, I., Kuberan, T., Suresh Kumar, R., 2010. Isolation and characterization of Agriculturally important microbes from panchagavya and their enzymatic activity. *J. Biosci. Res.* **1**(3), 194-201.

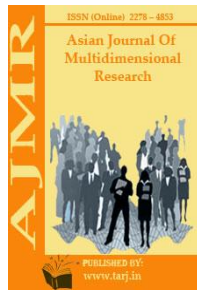
Reganold, J.P., Palmer, A.S., Lockhart, J.C. and Macgregor, A.N., 199. Soil quality and financial performance of biodynamic and conventional farms in New Zealand. *Science*. **260** (5106), 344–349.

Srivastava, S.K., Biswas, D.K.R., Garg, B.K.G., Haque, N.M.M.M., Ijaj, P., Tiwari, S.N.,2004. Management of Stem Borers of Rice and Wheat in Rice-wheat System of Pakistan, Nepal, India and Bangladesh. Rice-Wheat Consortium Paper, Rice-Wheat Consortium for the Indo-Gangetic Plains. New Delhi, India.

US Environmental Protection Agency, 2015. “Agricultural Pesticides: management improvements needed to further promote Integrated Pest Management”.

Vasanthkumar, H. H. R., 2006. Jeevamrut slurry preparation. *Siri Samruddhi*. 4-5.

Yong, S., 1994. Pesticide and its effected. Phnom Penh: CEDAC



## APPLICATION OF ITEM RESPONSE THEORY IN MEASURING FINANCIAL LITERACY

**Dr. Rakesh Krishnan M\***

\*Assistant Professor,  
Rajagiri College of Social Sciences,  
Kerala, INDIA.  
Email id: mrakeshkrishnan@gmail.com

---

### ABSTRACT

*The whole set of procedure established for development of measuring scales in social sciences was for ensuring their reliability and validity. However, the itemization of scales is a found to be still unscientific and unreliable. This article explores the scope of Item Response Theory in choosing the items for the operationalization of scales for measuring financial literacy.*

**KEYWORDS:** *Item Response Theory, Financial Literacy, Retail Investor, Scales, Investor Knowledge*

## INTRODUCTION

Knowledge about investment product equips investors to successfully manage (to obtain the desired outcomes) their investments. This is due to the fact that with highly developed conceptual structures, investors are able to comprehend product information (Alba and Hutchinson, 1987) and restrict processing to relevant and important information (Johnson and Russo, 1984). Furthermore, knowledgeable investors rely more on informational sources than do novices, who are more normatively influenced (Choong and Lord, 1996).

However, consumers in emerging economies have lower levels of product knowledge due to limited product-related consumer socialization (Gothan and Erasmus, 2008) and as an investor (who consumes investment products), this phenomenon results in uninformed investor behaviour. Despite the undisputed acknowledgment by the Governmental and other agencies of the society on the significance financial literacy and financial education programs, it remains the case that the field of financial literacy has a major obstacle to overcome: the lack of a widely disseminated measure of financial literacy, developed through rigorous scientific methodology (Melissa A and Carrie R, 2012). This paper attempts to bring out the potential application of Item Response Theory (IRT) in this context to fill the gap of a scientific measure of financial literacy.

## FINANCIAL LITERACY: EXPLANATION OF THE CONCEPT

Knowledge is a fluid of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information (Davenport and Prusak, 1997). A knowledgeable investor is one who has experience in a given context, possesses the ability to judge and evaluate investment product information and alternatives, and is efficient in obtaining desired information without excessive effort (Alba and Hutchinson, 1987). Knowledge is also defined as “the understanding, awareness, or familiarity acquired through study, investigation, observation, or experience over the course of time”. (Li-Su Huang and Cheng-Po Lai, 2012). The principal function of cognitive structure (of an investor) is to differentiate and evaluate various investment products and services in ways that are useful for decision making (Alba and Hutchinson, 1987). This paper focuses on knowledge of investors in the domain of investment management. This concept is popularly, but loosely adopted and termed as financial literacy.

In a very comprehensive review of the literature, (Hutson and Sandra, 2010) found that of the 71 studies evaluated, over 50 of such studies failed to define the concept of financial literacy appropriately. Though, 20 studies that did provide a definition, they observed eight separate meanings attributed to the term “financial literacy.” They also observed that many studies used the term “financial literacy” and “financial knowledge” interchangeably. Many researchers observed that the concept of financial literacy can be wholly encompassed under general knowledge of financially related topics (Hilgert, Marianne, Jeanne Hogarth, and Sondra Beverly, 2003), while many others pointed out the multi-faceted dimensions of the concept of financial literacy, covering not only knowledge, but also the dimensions of financial experiences (Moore and Danna, 2003), self-confidence in making financial decisions (Hutson and Sandra, 2010), and informed financial decision making (Remund and David L, 2010). However, a more comprehensive definition of financial literacy was, “the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being” (PACFL, 2008). This definition is much identical to the one used by Financial Literacy Education Council (2008)

of the United States Department of Treasury and also Jump\$Start (Jump\$Start is a national coalition in the US of organizations dedicated to improving the financial literacy of pre-kindergarten through college-age youth by providing advocacy, research, standards and educational resources.). Being that this general definition has been adopted by three major reputed financial literacy organizations, which collectively include 22 governmental agencies and over 80 private organizations, it seems likely that the research funded by these groups will come to adopt the definition provided as well; if this becomes the case, a large proportion of financial literacy research will eventually display a commonly accepted definition (Melissa A and Carrie R, 2012). The PACFL (2008) highlights there are two distinct components of financial literacy: financial knowledge and financial skills.

### **Measuring Financial Literacy: Present Practices - Flaws and Deficiencies**

Previous studies (Hutson and Sandra, 2010) had pointed out that that when measuring respondents' levels of financial literacy, researchers employed questions covering a wide variety of topics, including insurance, credit cards, mortgages, retirement savings, budgeting, inflation, and comparison shopping. Some Studies included a broad selection of these areas, others focused on only a single aspect; the number of questions used to assess financial literacy levels also varied widely, ranging from 3 to 45 total items (Melissa A and Carrie R, 2012). However, most of the studies purported to be assessing the same construct, namely financial literacy. While questions (items) used in many of the studies to measure financial literacy suggest that these questions are targeting financial literacy to some degree, it is difficult to conclude from these studies alone as to which questions or set of questions measure the construct as effectively as possible (Melissa A and Carrie R, 2012). Interpretations based on a test (or a scale) should be valid for that situation. Validity, therefore, is an argument that we make about our assumptions, based on test scores and we must make the case that the instrument we use does, in fact, measure what is intended to be measured (Brent Culligan, 2010). Validity is the most fundamental consideration in developing and evaluating tests (Hogan and Agenllo, 2004). One condition for the validity of the interpretation is that the test measures the psychological trait consistently, which is popularly referred to as reliability of a test. Thus, reliable test may or may not be valid, but an unreliable test can never be valid. One of the purposes of the reliability coefficient of a test is to give us a standard index with which to evaluate the validity of a test (Brent Culligan, 2010). More importantly, the reliability coefficient provides us with a way to find the Standard Error of Measurement (SEM). This paper basically outlines and reviews how the reliability index, K-R20, and the SEM are calculated under Classical Test Theory (CCT) and further, review the basic principles of IRT, and how the Information Function is used to obtain a Standard Error of the Estimate (SEE), a statistic similar to the SEM.

One of the most commonly reported indices of reliability under Classical Test Theory is the Kuder-Richardson Formula 20, or K-R20. This formula is applied to dichotomously scored data. In theory, this reliability index ranges from +1.00 to -1.00. Reliability coefficients (Kuder-Richardson Formula 20) of over .80 are considered to be very good, and over .90 are excellent. To obtain the Kuder-Richardson Formula 20 index for a test, we need to first find the sum of the variance for each item (pq) and the variance for the test scores. Reliability, as measured by the Kuder-Richardson Formula 20 formula, is the result of these two factors, item variance, and test variance. The Kuder-Richardson Formula 20 reliability index is directly proportional to the variances of the test, i.e., if the sum of the item variance remains constant, as the test variance



increases, so too does the reliability. This is also why reliability by itself paints an incomplete picture.

### **ITEM RESPONSE THEORY**

Scale reliability is the proportion of variance attributable to the true score of the latent variable. According to Classical Measurement Theory (CMT), the items are roughly equivalent indicators of the underlying phenomenon and thus the scales reliability is increased by redundancy. The concept of the item response function developed around 1940s. The pioneering work of IRT as a theory occurred during the 1950s and 1960s. Three of the pioneers were the psychometrician Frederic M. Lord, the Danish mathematician Georg Rasch and Austrian sociologist Paul Lazarsfeld, who pursued parallel research independently. IRT is looked at as an alternative and improvised model to the Classical Test Theory (CTT), widely used in studies in educational measurement and psychology. The goal of IRT is to enable a researcher to establish certain characteristics of items independent of who respond to them. In IRT, each item's relationship to the variable of interest is assessed and reliability is enhanced not by redundancy, but rather by identifying better items. Another important distinction between CMT and IRT is that CMT items are designed to be very similar to each other and to study the underlying variable in the same way, whereas IRT items are designed to tap different degrees or levels of the attribute (Robert F. DeVellis, 2003).

The IRT models concentrate on three parameters viz., items' difficulty, items capacity to discriminate, and its susceptibility to false positives. Item difficulty refers to the level of the attribute being measured that is associated with a transition from "failing" to "passing" that item (Robert F. DeVellis, 2003). The goal of determining item difficulty is to establish in an absolute sense as to how much of the attribute is required to pass the item. Thus, this then ensures a respondent's passing the item has a constant meaning irrespective of who the respondent is or what the average level of score for an item in a sample is. The second parameter IRT looks at is the degree to which an item unambiguously classifies a response as a "pass" or "fail". A less discriminating item has a larger scope of ambiguity. And finally, the third parameter in IRT is false positives. A false positive is a response indicating that some characteristic or degree of an attribute exists when in actuality it does not (Robert F. DeVellis, 2003). In other words, false positive is said to occur when a respondent with no ability to pass an item manages to pass it based on some unrelated circumstances. The IRT quantifies the three parameters discussed above and helps to select items that enhance the reliability of the scale. This is of much importance in a financial literacy context for the reason that reliability of scale is of utmost importance as the characteristic of respondent is not of much relevance.

### **DISCUSSIONS**

IRT approaches help us to direct our attention to the three important parameters of the items' performance which would strongly influence the reliability of the scale constructed by such items. The item characteristics (viz., item difficulty, item discrimination, and false positives) could be quantified and represented graphically to analyse their strength (Item Characteristics Curves). Fig 1. explains how ICCs for two items differs in difficulty.

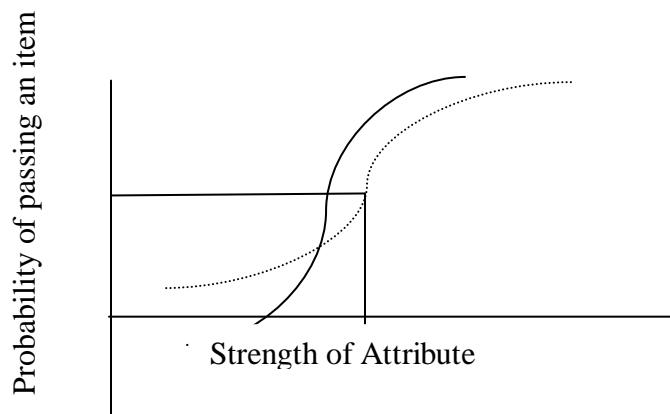


Fig 1. ICCs for two items differing in difficulty

Fig 1. Explains how the item difficulty. Each curve has different points on the curve when it attains say a 50% pass in respective items. Similarly, ICCs can be constructed. For the lighter curve, the point is farther towards to the right indicating that the attribute must be higher for an individual to have a 50% chance of passing (than in the case of the darker curve). Similarly, ICCs could help in determining the strength of an attribute on other parameters also. The CMT could indicate if an item is performing well or not (with the help of factor analysis or coefficient alpha), but would not indicate the nature of its problems. IRT in this aspect, could help to assess an item's strengths and its weakness more accurately.

## BIBLIOGRAPHY

- Alba and Hutchinson. (1987). Dimensions of Consumer Expertise. *Journal of Consumer Research*
- Brent Culligan. (2010). Retrieved 2012, from <http://www.wordengine.jp>. Choong and Lord. (1996). Experts and Novices and Their Use of Reference Groups. *AMA Educators' Proceedings: Enhancing Knowledge Development in Marketing*. American Marketing Association.
- Davenport and Prusak. (1997). Working knowledge: how organizations manage what they know. *Harvard Business School Press*.
- Gothan and Erasmus. (2008). Customers' judgement of the customer service in appliance sales departments in an emerging. *International Journal of Consumer Studies*, 639-347.
- Hilgert, Marianne, Jeanne Hogarth, and Sondra Beverly. (2003). Household Financial Management: The Connection Between Knowledge and Behavior. *Federal Reserve Bulletin*, pp. 309-322.
- Hogan and Agenlo. (2004). An empirical study of reporting practices concerning measurement validity. *Educational and Psychological Measurement*, 64, 802-812
- Hutson and Sandra. (2010). Measuring Financial Literacy. *The Journal of Consumer Affairs*, 296-316.
- Johnson and Russo. (1984). Product familiarity and learning new information. *Journal of Consumer Research*.

Li-Su Huang and Cheng-Po Lai. (2012). An investigation on critical success factors for knowledge management using structural equation modeling. *Procedia - Social and Behavioral Sciences*, (pp. 24-30).

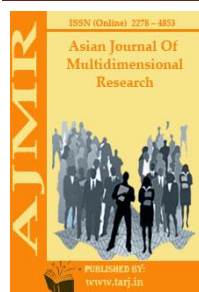
Melissa A and Carrie R. (2012). The Financial Knowledge Scale: An Application of Item Response Theory to the Assessment of Financial Literacy. *The Journal of Consumer Affairs* , 381-412.

Moore and Danna. (2003). *Survey of Financial Literacy in Washington State: Knowledge, Behavior, Attitudes, and Experiences*. Washington : Social and Economic Sciences Research Center, Washington State University.

PACFL. (2008). *President's Advisory Council on Financial Literacy* . Pennsylvania : PACFL.

Remund and David L. (2010). Financial Literacy Explication: The Case for a Clearer Definition in an Increasingly Complex Economy. *The Journal of Consumer Affairs* , 40, 276-295.

Robert F. DeVellis. (2003). *Scale Development: Theory and Applications* (Vol. 26). USA: SAGE Publications.



## MAKE IN INDIA: “AN ACTION AGENDA FOR ENTREPRENEURSHIP AND INNOVATION IN RURAL AREAS, INDIA.”

**Mohd Shuaib Siddiqui\* ; Dr.Aftab Alam\*\* ; Prof.Dr.Mairaj Salim\*\*\***

\*Lecturer and Research scholar,  
Integral University, Lucknow, INDIA.  
Email id: shuaibsiddiqui78@gmail.com

\*\*Professor Dean,  
Department Of Business Administration,  
Integral University, Lucknow, INDIA.  
Email id: aftabalam101@gmail.com

\*\*\*Prof Dr, King Abdul Aziz University,  
Jeddah (KSA), INDIA.

### ABSTRACT

*The paper discusses the impact and opportunities of initiative i.e. make in India on the Entrepreneurial and innovative behaviour of persons belonging to rural areas. In India there is imbalanced employment between rural and urban areas. The paper underscores that entrepreneurship and innovation in rural areas are an important untapped source of growth in India, creating new employment opportunities and avenues for economic independence. Development of rural areas has been linked to entrepreneurship more than ever before. Entrepreneurship is now regarded as a strategic development intervention that could accelerate the rural development process by make in India campaign. Millions and Millions of Indian youth from rural areas should acquire the skills which could contribute towards making India a modern country. Transformation of rural areas into a Manufacturing hub will help develop, strengthen and modernize the Indian infrastructure. It also studies the problems and challenges faced by the rural areas and focuses on the relevance of make in India campaign and it discusses the efforts made by the government towards the promotion of innovation for entrepreneurship development and sustainable growth. The data required for the research paper are collected both from secondary sources. The Secondary data are collected from various published sources such i.e. magazines, newspapers, journals, books, and various other publications. Moreover, some important information is also collect from relevant Websites.*

**KEYWORDS:** *Make In India Campaign, Rural Areas, Entrepreneurship, And Innovation.*

---

## **L. INTRODUCTION**

Make in India is an initiative of the Government of India to encourage multinational, as well as domestic, companies to manufacture their products in India. It was launched by Prime Minister Narendra Modi on 25 September 2014. The objective of the scheme is to ensure the manufacturing sector which contributes around 16% of country's GDP is increased to 25% in next 5 years. It will ultimately generate more employment opportunities for the poor and give greater purchasing power in their hands. Three sectors which contribute to GDP of any country are agriculture, manufacturing and services. According to the current contributions of these sectors to Indian economy manufacturing occupies 16% which is lowest. There are lots of opportunities to be tapped as far as Indian manufacturing sector is concerned.

Manufacturing sector in terms of entrepreneurship and innovation is the backbone of any economy as it fuels growth, productivity, employment, and strengthens other sectors of the economy. The situation of manufacturing sector in India is a cause of concern especially when seen in comparison to the massive transformation registered in this sector by other Asian countries in similar stages of development. The launch of Make in India programme would go a long way to establish India as a major manufacturing hub that will generate millions of employment opportunities and push India on a high and sustainable growth trajectory in the coming times.

Many business man and entrepreneurs view make in India initiative for betterment of our economy. VNS Global Services group CEO Keshav Murugesh said “ digitization campaign such as digital India ‘Make in India’ creating smart cities and other digitization projects initiated by the Indian Government in the past one year has been made for the betterment of India. Major objective of this scheme focuses on 25 sectors. The sectors are Automobiles, textiles and Garments, Biotechnology, Wellness, Defence, Manufacturing, Ports, Food Processing, Mining, Media and Entertainment, IT and BPM, Pharmaceuticals, Renewable Energy, Roads and Highways, Railways, Thermal Power, Oil and Gas, Space, Leather, Construction, Aviation, automobile components, chemicals and Electronic System.

Entrepreneurship plays an eminent function in creating an avenue for employability for rural communities, providing self-employment for those who have started-up a business of their own and enhancing the economic status of the rural sector as well. Entrepreneurship has transformed many entrepreneurs into successful business persons and generated income for rural communities. Entrepreneurs in rural area have transformed their vicinity into trading hubs thus enabling them to become urbanized areas. Through efficient and effective utilization of national resources, they act as catalysts for economic development and agents of social transformation and change. The need for rural entrepreneurship for developing industries in the rural areas is induced with multiplicity of justifications as listed below-

- Rural industries being labour intensive have potential in employment generation.
- By providing employment, these industries have also high potential for income generation in the rural areas. These, thus help in reducing disparities in income between rural and urban areas.

- These industries encourage dispersal of economic activities in the rural areas and thus promote balanced regional development.
- Development of industries in the rural areas also helps build up village republics.
- Rural industrialization fosters economic development in rural areas.
- Last but means the least, rural industries being environment friendly lead to development without destruction i.e., the most desideratum of the time.

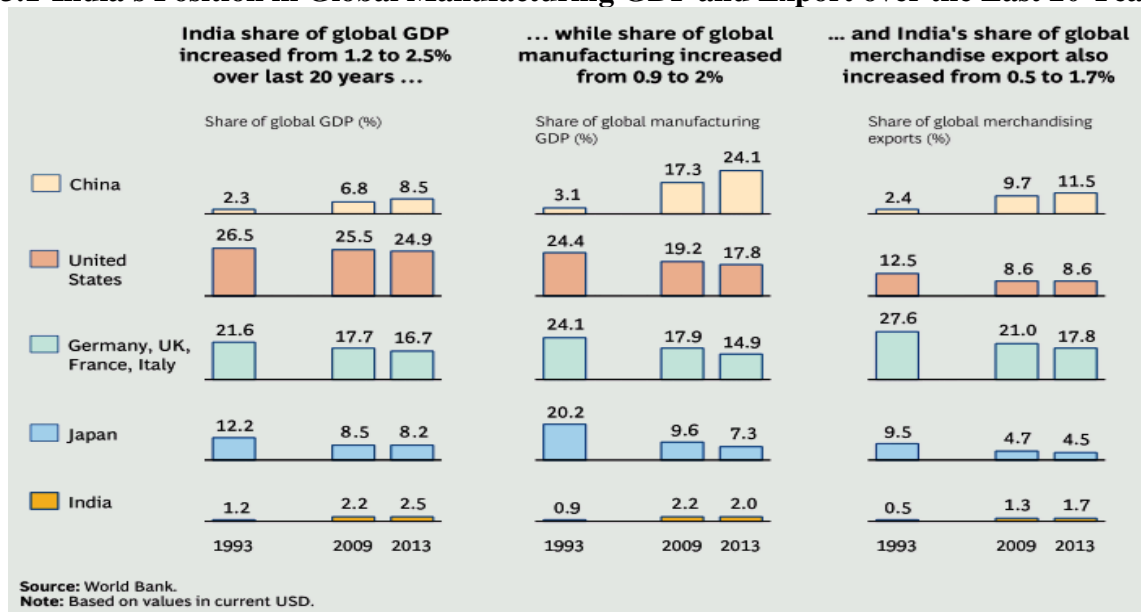
## II. FEATURES AND PROBLEMS OF RURAL ENTREPRENEUR

As per the features, the existing rural areas are large and scattered, low standard of living, traditional outlook, diverse socio-economic backwardness and poor infrastructure facilities. The major problems faced in the rural areas of the state are underdeveloped people and under developed markets, ethnic problems facing people, many dialects, dispersed markets, low per-capita income, low levels of literacy, difficult access to technology, lack of a supportive system, prevalence of spurious brands and seasonal demand and a different way of thinking. These pose great challenge to rural markets.

## III. STORY OF INDIA OVER LAST 20 YEARS

Over the last 20 years, Indian manufacturing has by and large grown at the same pace as our overall economy. Our share of global manufacturing has grown from 0.9 to 2.0 percent during this period while our GDP share has grown from 1.2 to 2.5 percent. Despite this encouraging growth, however, the relative share of manufacturing in the Indian economy has remained unchanged, dashing hopes of an economy based on manufacturing-led growth. The sector accounted for 15 percent of GDP in 1993, a rate that remains about the same today. Meanwhile, several Rapidly Developing Economies (RDEs) have increased their share of manufacturing to above 20 percent of their GDP, in particular Thailand (34 percent in 2012), China (32 percent), Malaysia (24 percent), Indonesia (24 percent) and the Philippines (31 percent).

**Fig 3.1-India's Position in Global Manufacturing GDP and Export over the Last 20 Years**



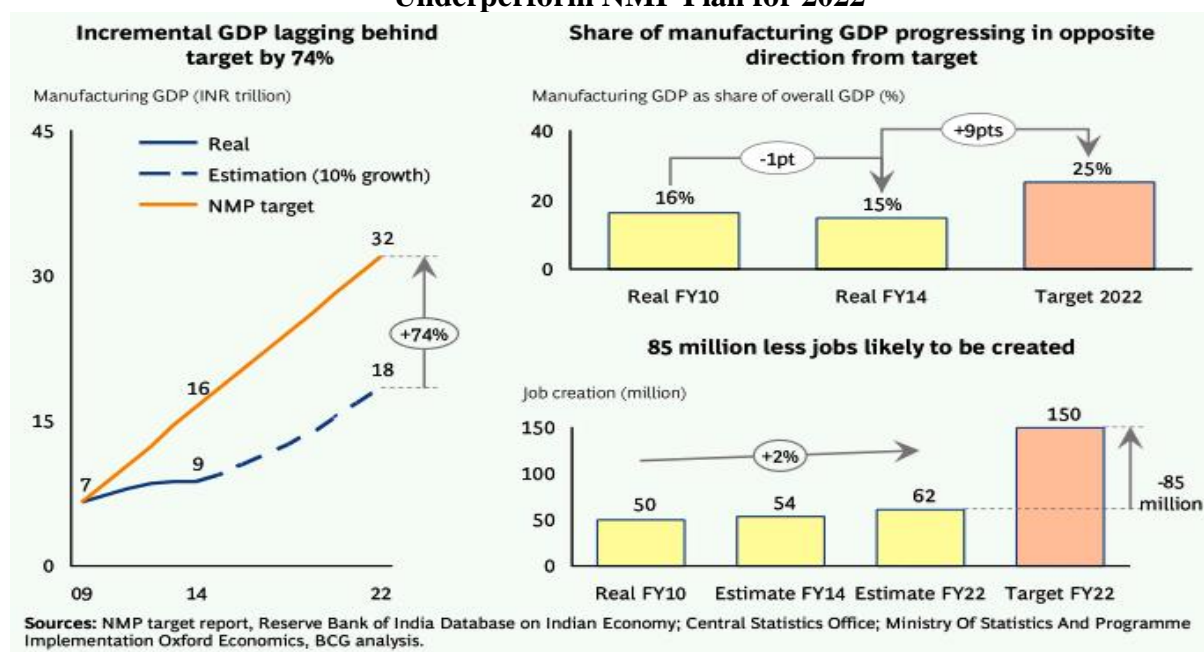


According to fig. 1 over the last five years, there has been a reversal of sorts to this manufacturing trend, with Indian manufacturing's share of GDP falling from 2.2 to 2.0 percent between 2009 and 2013, even as the country's share of global GDP grew from 2.2 to 2.5 percent over the same period.

#### IV. FUTURE OUTLOOK AND EXPECTATIONS THROUGH MAKE IN INDIA

While the historic performance of the manufacturing sector has been below par, with especially poor results over the past five years, the mood in India across the broader industrial sector has started to shift over the past six months, thanks to two factors. First, India's recent election outcome is widely considered to be good news for the industry. Second, the overall economic outlook across the world has been improving.

**Fig 4.1 At Current Growth Trajectory, Indian Manufacturing will significantly Underperform NMP Plan for 2022**



According to Fig. 2, at the current rates of underperformance, the sector will fall well short of the target set by the National Manufacturing Policy (NMP) of 2012. While the policy set out plans for the sector to reach 25 percent of GDP and create 100 million additional jobs by 2022, the sector's contribution to GDP has fallen from 16 to 15 percent, with fewer than five million incremental jobs having been added to the economy over the past five years. All these expectations will be achieved through the tackling of rural entrepreneurs and skill development & innovation in rural areas.

#### V. OBJECTIVES OF THE STUDY

- To study the problems faced in growth of rural entrepreneurs
- To find out the remedies to solve the problems of rural entrepreneurs
- Provide Employment and equality to the rural areas.
- To provide suggestions for development of rural entrepreneurship

- Boost Economic Growth of Rural and Urban areas.
- To come out with both local and foreign companies to invest in India.
- To convert Rural and Urban areas into Global Manufacturing Hub.

## VI. METHODOLOGY

The data required for the study is collected from secondary sources. The Secondary data are collected from various published sources such as journals, books, and various other publications. Moreover, some important information is also collect from relevant websites. The study is descriptive in nature.

## VII. REVIEW OF LITERATURE

Richard T. Ely and Ralph H. Hes, [1] briefly stated, “The entrepreneur organizes and operates an enterprise for personal gain. He pays current prices for the materials consumed in the business, for the use of the land, for the personal services he employs, and for the capital he requires. He contributes his own initiative, skill, and ingenuity in planning, organizing, and administering the enterprise. He also assumes the chance of loss and gain consequent to unforeseen and uncontrollable circumstances. The net residue of the annual receipts of the enterprise after all costs have been paid, he retains for himself.

Joseph Schumpeter’s [2] vision on entrepreneurs is as, “The function of the entrepreneur is to reform or revolutionise the pattern of production by exploiting an invention or, more generally, an untried technological method of producing a new commodity or producing an old one in new way, opening a new source of supply of materials or a new outlet for products, by organizing a new industry.”

Robert D. Hisrich and Michael P. Peters [3] stated that, “The concept of innovation and newness is an integral part of entrepreneurship in this definition. Indeed, innovation, the act of introducing something new, is one of the most difficult tasks for the entrepreneur.

Deepti Srivastava [4] evaluated that rural markets are rapidly growing in India but have often been ignored by marketers. 53% percent of Fast Moving Consumer Goods (FMCG) and 59 % of consumer durables have market in the rural belts.

Hina Shah [5] stated, the efforts to develop women need to be substantiated and strengthened. To lead women towards Entrepreneurship by creating an enabling environment. Including those that emerged from the National Consultation on Creating an Enabling Environment for Women’s Entrepreneurship under the Role of Government, Role of BDS Providers, Role of Supporting Organizations , Access to Finance, Access to Market, Access to Infrastructure and social service, Access to Technology, Other measures to create enabling environment.

Arindam Bhattacharya, Arun Bruce,&Anirban Mukherjee stated that [6] this is truly a time of great expectations for India, and this is probably the only time in recent past where our odds of driving breakout growth in manufacturing are very high. We have a strong, pro-industry government, global economy is picking up, and our core advantages are still strong and relatively unaffected from the global slowdown.

Ravindra Abhyankar[7] examined that, The policy is in place; now, its success dependson its implementation. Sometime will need before conclusions can be drawn about the policy's ultimate effects on the growth path. However, the new direction reflects strong growth aspirations and

resonates with the zeal and zest of the youth who wish to journey on the risky path of innovation-based entrepreneurship.

Dr. Dilip Ch. Das [8], stated that Rural entrepreneur is a key figure in economic progress of India. Rural entrepreneurship is the way of converting developing country into developed nation. Rural entrepreneurship is the answer to removal of rural poverty in India.

Sandip Das [9] examined that experts argue the country needs to focus on quality education not just skill development. "In the emerging economy, people will need to continuously learn new skills to meet the economy's changing requirements," an official with an industry association observed.

S. Soundhariya [10] stated that, "Make in India" mission is one such long term initiative which will realize the dream of transforming India into manufacturing Hub. Make in India scheme also focuses on producing products with zero defects and zero effects on environment.

Alok B Shriram [11], stated in the study, The DMIC Corridor provides excellent investment opportunities to the businesses which is expected to not only facilitate ease of doing business and increase industrial output but is also expected to generate employment opportunities and promote socio-economic growth of India.

## VIII. SUGGESTIONS

- Government should arrange special training and skills development programmes for rural entrepreneurship.
- Rural entrepreneur should more competitive and efficient in the local & international market.
- Government should provide separate financial fund to rural entrepreneur for innovation.
- The concern department should provide special infrastructure facilities whatever they need to achieve the goal of Make in India.

## IX. CONCLUSION

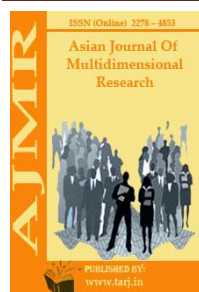
This study helped to understand that rural entrepreneur is a key figure Make in India and economic progress of India. Rural entrepreneurship is the way of converting India into developed nation. Rural entrepreneurship is the answer to removal of rural poverty in India and to generate employment. Therefore, there should be more stress on integrated rural development programs. The problem is that most of the rural youth do not think of entrepreneurship as the career option due to lack of proper channel of communication. Therefore, the rural youth need to be motivated to take up entrepreneurship as a career, with training and sustaining support systems providing all necessary assistance. There should be efficient regulated market and government should also lend its helping hand in this context.

## Acknowledgement

Authors are thankful to Dean, Research and Development, Integral University for assigning communication number (IU/R&D/2017-MCN000208) for this manuscript.

## REFERENCES

- [1] Richard T. Ely and Ralph H. Hes, (1937), "Outline of Economics", 6th Ed. MacMillan, New York, USA.
- [2] Joseph Schumpeter,(1952), "Can Capitalism Survive", Harper and Row, New York Pg 72.
- [3] Robert D.H. and Michael P.P., (2002), "Entrepreneurship" 5 th Edition, McGraw Hill Higher Education.
- [4] D.Srivastava (2010) to Rural India marketing- A changing paradigm. Asia pacific journal of research in business management.
- [5] Hina Shah, (May, 2013)"Creating An Enabling Environment for Women's Entrepreneurship In India".
- [6] Arindam Bhattacharya, Arun Bruce, and Anirban Mukherjee,(2014) Make In India: Turning Vision Into Reality, CII 13th Manufacturing Summit.
- [7] Ravindra Abhyankar, (2014) The Government of India's Role in Promoting Innovation through Policy Initiatives for Entrepreneurship Development.
- [8] Dr.Dilip Ch. Das, (2014)Prospects and Challenges of Rural Entrepreneurship Development in NER-A Study, Asst. Prof., Dept. of Commerce, Goreswar College, Assam, India.
- [9] Sandip Das, (2015)Make In India- A Boost To The Manufacturing Sector.
- [10] S. Soundhariya(Sept-2015)to Make in India – Scheme For Transforming India, Soft Skill Trainer, Maharaja Prithvi Engineering College, Avinashi, Tirupur (Volume-4, Issue-9)
- [11] Alok B Shriram, (2015) "Exploring Prospects for Make In India and Made In India: A Study", President, PHDCCI.



## CONTEXTUALISING INCOME GROWTH AGAINST THE BACKDROP OF PUBLIC EXPENDITURE AGGREGATES: A CASE STUDY OF ASSAM FOR THE PERIOD 1980-2014.

Manoj Kumar Talukdar\*; Biswambhara Mishra\*\*

\*Research scholar,  
Department of Economics,  
NEHU, Shillong, INDIA.  
Email id: manojtalukdar@rediffmail.com

\*\*Faculty,  
Department of Economics,  
North Eastern Hill University  
Shillong, Meghalaya, INDIA.  
Email id: bmishra\_nehu@hotmail.com

### ABSTRACT

*In recent times there has been a tremendous increase in government expenditure in the states of Assam. Yet, we find that in relative terms, the state sector has shrunk in comparison to the gross state domestic product. The period has also witnessed much change in the economic and functional composition of public expenditure. There has been a marked shift from developmental to non-developmental expenditure and within the former a shift away from expenditure on economic services to that of expenditure on social services. The moot point is whether such developments have had any visible impact on the development outcome in the state. In order to study the dynamics of the casual relationship between public expenditure and economic growth in the state, our study applies the Unit root test and Johansen Co-integration Test followed by Error correction Mechanism on time series data to estimate the short-run and long-run relationships between government expenditure and economic growth. The results show the non-existence of a causal relationship between aggregate government expenditure and economic growth. Further, aggregate government expenditure and its main components have very weak adjustment tendency towards long run equilibrium in economic growth. We determine that, at the aggregate level, capital and revenue expenditures have a positive and significant relationship with GSDP. Again, expenditure on social services and economic services has*

*positive and significant impact on economic growth whereas expenditure on general services has a positive but insignificant impact on.*

**KEYWORDS:** *Public Expenditure, Income Growth, Granger Causality, Error Correction Model, Co-Integration, JEL Classification: E62, I3, E63, R5*

## 1. INTRODUCTION

In the development paradigm the traditional view was that the state had to play an important role to kick start the growth process. Once growth was underway the fruits of it would be available to the vast numbers of underprivileged citizens through the trickle-down effect. The state, through its fiscal policy was required to intervene in the economy to initiate the growth process and sustain it over time.

The stance of fiscal policy is being put to increased scrutiny and the beneficial or distortionary impact of fiscal aggregates can now be analysed in a critical manner due to the advance in econometric techniques. Better insight is now being provided on the role of public expenditure and its impact on the rest of the economy.

At the aggregate level one may undertake a study on the efficacy of public expenditure and its components in furthering the growth imperative. The theoretical underpinnings of this approach can be discerned by reviewing some of the path breaking works available in the literature.

In “Wagner’s law of increasing state activity”, (Wagner 1863), public expenditure has been considered a behavioural variable, endogenous to the economic system. With income growth, there arises a greater demand for administrative and legal services. The private sector is unable to, or inefficient in, catering to this increased demand and public authorities have to step in to provide such collective goods and services which are highly income elastic. As society’s income grows, so does the size of the public sector. Causality, in Wagner’s Law, runs from national income to public expenditure.

The ‘Displacement hypothesis’, attributable to Peacock and Wiseman (1961) explained increases in the ratio of government expenditure to national income not as a smooth continuous increase, but as a discrete series of jumps. These jumps are associated with major upheavals financed by higher levels of taxation. With the passage of time the tolerable level of taxation shifts upward which in turn leads to a higher ratio of public expenditure to national income. The government is able to maintain expenditure at historically high levels even though the exigency is well past (Henry, 2000).

In contrast, the Keynesian view, (Keynes, 1936), hypothesized that public expenditure is an exogenous factor that can be used as a policy variable, one which can impact upon growth and development in the short-run (Sahni 1984; Tang, 2009). An increase in government expenditure stimulates output and employment through the multiplier effect. There is a long run causality running from government spending to economic growth.

The above analysis is suggestive of the fact that if causality were to run from aggregate expenditure to income, then by the Keynesian prescription, public expenditure becomes a potent policy tool. However if causality runs from income to public expenditure, as proposed by Wagner, then public expenditure, would be less potent as an effective policy instrument (Singh and Sahni, 1984; Magazzino et al, 2015). The government spending and national output



relationship is also relevant for the debate on the sustainability of public finances, especially during the phase when governments struggle to restrain government spending (Kumar, 2012). Further, an inordinately large public sector may have negative spill-over effects on the economy due to financing of government spending via increased taxation, the levy of user charges, increased public borrowings and/or printing money. On the other hand, if government spending is constricted or even equal to zero, economic growth may be similarly constrained due to difficulties arising from a paucity of public goods. Therefore, an optimal level of government spending which maximizes growth exists (Asimakopoulos, 2015).

The above studies and their findings provide the motivation to go into the nexus between public expenditure and its broader components and their impact on the working of the economy, specifically income growth.

We briefly review a number of studies conducted at the state's level before embarking on our analysis of the public expenditure-growth nexus in the state of Assam. In an early study Mishra et.al (2005) studied the growth and determinants of public expenditure in north-eastern states in general and Nagaland in particular, for the period 1963-64 to 2000-01, taking into account economic and political variables. They found that it mattered little as to which party was in power in the state of Nagaland and that ideological leanings of the party in power did not systematically result in any difference in the determination of public expenditure. Further, all dispensations and their policy orientation had a negative impact on the growth of non-developmental expenditure in the state.

Hassan et al., (2016a; 2016b) found that increasing public expenditure on infrastructure facilities and on the provision of basic social services raises the economic potential of an economy while positively impacting social indices. In a similar study, set in the context of J&K state, Hassan and Mishra (2017) failed to determine any causal nexus between government expenditure and economic growth in the long run.

Suresh and Mishra (2010) found a lopsided approach in the government investment decision making process which not only slowed down the indicators of human development but also resulted in a slow pace of economic growth in the state. Their study revealed that at the regional level, there existed a positive functional relationship between public expenditure on social sectors and human development and that public expenditure on social services had a stronger impact on human development rather than on economic growth.

From the above, it would seem that there is little relation between public expenditure and aggregate income at the states level. It could well be that the quantum of expenditure or that portion which is effective in raising the level of growth was not commensurate to the needs of resource strapped states bogged down by the weight of unfulfilled social aspirations. For one, a perusal of the expenditure priorities of a number of states show up the fact that in recent times the ratio of developmental to non-development expenditure is on the rise. Also there is a growth in expenditure devoted to the social sectors at the expense of expenditure directed towards economic services. The direct impact of the former to the growth in income is indirect in that it could lead to growth, plausibly by enhancing the human resource base in the economy, whereas in the case of the latter increased expenditures have the potential to raise productivity directly via better infrastructure facilities and a higher level of capital assets.

Keeping the above mentioned studies in mind we aim on examining the causal nexus between public expenditure and its broad components and economic growth in the state of Assam. The

aim is to delineate the efficacy of public expenditure aggregates on while disentangling the impact of, alternative expenditure aggregates on the level of gross domestic product.

Our primary aim is to determine the relation between aggregate public expenditure and the level of income as well as the direction of causality. Economic policy is set in a dynamic environment and the nature of the relationship between various economic variables does change over the course of the development process. We need a better understanding of the changing relation between government spending and aggregate income in order that suitable inflections may be incorporated in decision making, in the short as well as in the longer term. It is incumbent to ensure that the mix of public expenditure across economic and functional categories is optimised.

## **2. BACK GROUND OF THE STUDY**

The Indian constitution clearly demarcates the areas of responsibility of the central government and the constituent states of the Indian union. Social sector responsibilities lie predominantly in the state list with a few in the concurrent list. The provision of physical capital depends on the efficient utilisation of plan resources at the state's level. The states themselves are not homogenous and differ widely in their levels of development. Their resource base and geographical location and access to human and physical capital too show a wide degree of variability (Rao 2015). Hence public expenditure incidence studies undertaken in India relying on cross sectional data have failed to come to grips with the differential impact of public expenditure across states. Diagnoses based on state level data do not offer valuable insight on why things pan out as they do, particularly resource strapped states found to be lagging behind in their developmental performance. Case studies could help in directing public expenditures in directions that would aid in combatting specific ills.

Assam is a special category state having access to special funding from central agencies. However there has been no visible impact on social sector outcomes or growth performance relative to other states in the country. The state is one of the worst performers on most counts of development be that in matters related to progress in social indicators or in matters related to income growth. This calls for focused analysis on the course and content of public expenditure initiative and performance thereon.

To provide a brief overview of the movements in fiscal aggregates and the movement in GSDP we may start by noting that over the period of study, (1980-81 to 2013-14) the compound annual rate of growth (cagr), in nominal terms, of aggregate government expenditure has been phenomenal at 12.5% per annum. The growth in revenue expenditure at 14.6% cagr has outstripped that in capital expenditure - cagr of 12.0%. More importantly the share of capital expenditure in aggregate public expenditure has been consistently on the decline. From roughly 34% of aggregate public expenditure in 1981-82, the share of capital expenditure has fallen to 14% in the terminal year 2013-14. It would be instructive to mention here that public expenditure as a ratio to GSDP has fallen over time. In 1980-81, it was 30% but fell to 19% the following year. Subsequently this ratio increased through the 80s and reached peak levels of around 25%. From the 90s onwards the ratio declined to settle at 21% in 2013-14. Thus total expenditure has been falling as a percentage of GSDP and this fall has been marked by a squeeze in capital expenditures.

It remains to be seen what the fallout of this disproportionate decline in capital expenditure has been on the level of income prevailing in the state. It would be more instructive if we were to look at the sub-segment of capital expenditure, that is, capital outlay of the state

government. Such expenditures directly impact the creation of productive assets in the economy. As a proportion of GSDP the capital outlay of the state government has fallen from 3% in 1980-81 to 1.83% of GSDP in 2013-14. Evidently a part of the declining share of total capital expenditure has been effected by slashing capital outlays. Clearly, an underdeveloped state, suffering from deficient infrastructure facilities and one with a fledging industrial base, can ill afford to constrict capital outlays which are witnessing a falling trend over time.

While looking into expenditures incurred on social, economic and general services we take note of the following facts. Firstly, the share of social services in public expenditure has steadily increased from approximately 22% in 1981-82 to 36 % in 2013-14. Similarly, the share of general services has risen from 14 % to 24 % of aggregate public expenditure over the corresponding period. The share of economic services in aggregate public expenditure has fallen from 29% in 1981-82 to 24% in 2013-14. The share of aggregate development and aggregate non-development expenditure reveals a more interesting picture. The two are negatively correlated ( $r=-0.6$ ) with development expenditure progressively increasing at the expense of allocations meant for developmental activities. The correlation coefficient for the share of Social services and economic services in aggregate public expenditure is similarly negative ( $r=-0.35$ ) with the former gaining at the expense of the latter.

The facts noted above may be indicative of the following. In the state of Assam, there has been a slow decline in the share of public expenditure as a proportion of the state's GSDP. This decline has been more pronounced in the case of capital expenditure rather than that in revenue expenditure. There has been a steady erosion of the share of economic services in total government expenditure and this slack has been taken up in equal measure by an increase in the share of expenditure on social services and that in general services.

How have these developments on the expenditure been reflected in the growth experience? Over the period of study, 1980-81 to 2013-14, we notice that GSDP has grown at a cagr of 13.7% per annum. A higher rate of growth in nominal GSDP than that in nominal government expenditure has resulted in a decline in the share of government expenditure in GSDP. The growth in nominal percapita income has been lower at 11.7% per annum. This is hardly encouraging when we take into account the fact that real percapita income growth has been subdued at 1.9% cagr.

Clearly the growth dividend has been inadequate for much of the state's population. If the state has to approximate the average living standards obtaining in the country or even aspire to those prevailing in other developed states of the Indian union, then clearly, there has to be a quantum leap in the prevailing rates of growth and the responsibility for ensuring this will lie in the hands of the government to a large extent. There has to be a paradigm shift in policy orientation as well as a streamlining of the revenue generation process to support a more efficient expenditure mix

In the following sections we make an attempt to study, how exactly, public expenditure allocations have impacted economic growth, if at all. The moot question is whether the thrust of expenditure decisions have been vindicated from the growth outcomes. If not where could the lacunae lie?

### 3. THE SOURCES OF DATA

This study is based on secondary data gleaned from alternative sources. The data extends over a period of 34 years from the year 1980-81 to 2013-14. Data on fiscal aggregates have been accessed from the repository of the RBI, specifically various issues of 'State Finances- a study of

Budgets' which offer a rich menu of fiscal data both for the Union and the states. These have been supplemented by the "Handbook of Statistics on State Government Finances". The figures for state income have been accessed from the EPWRF database which conforms to the figures published by the Ministry of Statistics and Programme Implementation, Government of India. All data used have been quoted in real terms at 2011-12 prices, using the appropriate GDP deflator.

To conduct our analysis we have concentrated our attention on the following time series

TEXPt = Aggregate government expenditure

REXPt = Revenue Expenditure

CEXPt = Capital Expenditure

EXPSSt = expenditure on social services

EXPESt= expenditure on economic services

EXPGSt = expenditure on general services

#### 4. ESTIMATION PROCEDURES

##### 4.1 Stationary test/Unit root test

As a first step we check for stationarity of the time series data using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) test. The purpose of using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) is to identify *white noise* errors. A series  $y_t$  (government expenditure and its different components) is said to be integrated of order  $d$  denoted by  $y_t \sim I(d)$  if it becomes stationary after differencing  $d$  times and thus  $y_t$  contains  $d$  unit roots. A series which is  $I(0)$  is said to be stationary. To test formally for the presence of a unit root for each of the public expenditure categories and GSDP taken up in the model, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests of the type indicated in regression (1) and (2) were conducted. The ADF test is conducted using the regression of the form:

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum_{j=1}^p \gamma_j \Delta y_{t-j} + \varepsilon_t \quad (1)$$

Where,  $\Delta$  is the first-difference operator,  $y_t$  is the respective variable of expenditure over time,  $p$  is lag,  $\alpha_0$  is constant,  $\alpha_1$  and  $\gamma_j$  are parameters and  $\varepsilon_t$  denotes stochastic error term.

If  $\alpha_1 = 0$ , then the series is said to have a unit root and is non-stationary. Hence, if the hypothesis,  $\alpha_1 \neq 0$ , is not accepted it can be concluded that the time series does not have a unit root and is integrated of order  $I(0)$ , or in other words it has stationarity properties.

Similarly the Phillips-Perron (PP) test is estimated by the following equation:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 (t - T/2) + \mu_t \quad (2)$$

Where;  $\alpha_0, \alpha_1, \alpha_2$  are the expected least-squares regression coefficients. The hypotheses of stationarity to be tested are  $H_0: \alpha_0 = 1$  and  $H_0: \alpha_1 = 1, H_0: \alpha_2 = 0$ .

To level the series and facilitate the explanation of the regression coefficients in terms of elasticities, our regression analysis has been conducted on natural logarithms of government expenditure and its components and the GSDP series. With trending variables, the testing

equation has intercepts when variables are expressed in first differences and Akaike's Information Criterion (AIC) has been used to determine the lag order of each variable under study.

#### 4.2. Co-integration test

After conducting the stationarity test we performed the co-integration test to identify the stable relationship between non-stationary series within a stationary model, Adam (1998). It is important to carry out the co-integration test to avoid the phenomena of spurious and inconsistent regression. The method of co-integration makes it possible to identify information on non-stationary series without losing the statistical strength of the estimated equation (Stock and Watson, 1988). The test is conducted to know the number of co-integrated vectors/equations present amongst the variables and examine whether there exists any long run association between the variables. Johansen and Juselius co-integration test (1990) has been carried out with the help of the following equation:

$$y_t = \alpha_t + \theta_{it}x_{it} \dots \dots \dots \theta_{nt}x_{nt} + \mu_t \quad (3)$$

Where  $y_t$  and  $x_{it}$  are, respectively, the log of prime cyclically adjusted GSDP and of government expenditure and its respective components, variable 'i' in year t,  $\mu_t$  is a stochastic residual and  $\alpha_t$  is the specific intercept. The elasticity of GSDP  $\theta_{it}$  is allowed to vary across individual variables over time. Co-integration occurs when the linear combination of I (1) variables is stationary, implying that deviations of one variable from the path prescribed by the co-integrating relationship are temporary. In such a case, there is a long-run relationship between the variables and temporary deviations can be modelled with an error correction mechanism (ECM). The test is analysed on certain hypotheses which are tested on trace statistics and Max-Eigen value statistics. Trace statistics tests the null hypothesis of none or 1, 2, 3,.....n co-integrated vectors or alternative hypothesis of no co-integrated vectors. Similarly Max-Eigen statistic tests the hypothesis of none or 1, 2, 3,.....n co-integrated vectors. If we do not find any co-integration equation among the variables fitted in the ECM equation the method to obtain the error correction term, will change, either to a VAR or a VECM model. If, in some cases, the Trace and Max-Eigen statistics yield different results then the results of the trace test ought to be preferred. The test is performed on natural log of level data and the following equation has been used to identify co-integration between the variables.

#### 4.3 Model specification

After the above analysis we approach the final analysis that is an examination of the long run as well as the short run relationship between GSDP and different government expenditure categories. After undertaking the co-integration analysis we find that certain variables have a long run association with GSDP (i.e., they are co-integrated) whereas other variables do not have any long run association with GSDP (i.e., are not co-integrated). Thus we have used the VAR model to predict relationships between the variables mentioned. The VAR model is used for those equations where we found no co-integrated equation (i.e., no long run association) in order to identify short run relationship between the constituent variables.

An Auto Regressive Distributed Lag Model (ARDL) is a modelling technique which allows each variable to have its own optimal lag length and adds error correction features to a multi-factor model to understand long-run as well as the short-run relationship among the variables after determining that the variables have no integration of order I (0) and/or I (1) and exhibit long run



cointegration. We have divided the explanatory variables into three equations where two of them have been analysed through the VAR model due to the nature of the relationship between them and one has been analysed under ARDL model. The equations have been arranged to avoid the problem of multi-collinearity (Karagoz 2012). These three equations are used in this paper to analyse the long as well as short run relationship between aggregate government expenditure and its broad components with GSDP, by keeping in mind the multi collinearity factor and to facilitate the identification of the error correction term. VAR and ARDL will be used on the basis of co-integration test of these equations.

$$DGSDP_t = \alpha_1 + \sum_{i=0}^n \beta_1 DGSDP_{t-i} + \sum_{i=0}^n \beta_2 DTEXP_{t-i} + \prod ECT_{t-1} + \epsilon_{1t} \dots \dots \dots (4)$$

$$DGSDP_t = \alpha_2 + \sum_{i=0}^n \gamma_1 DGSDP_{t-i} + \sum_{i=0}^n \gamma_2 DREXP_{t-i} + \sum_{i=0}^n \gamma_3 DCEXP_{t-i} + \prod ECT_{t-1} + \epsilon_{1t} \dots \dots \dots (5)$$

$$DGSDP_t = \alpha_3 + \sum_{i=0}^n \beta_3 DGSDP_{t-i} + \sum_{i=0}^n \beta_4 DEXPSS_{t-i} + \sum_{i=0}^n \beta_5 DEXPES_{t-i} + \sum_{i=0}^n \beta_6 DEXP GS_{t-i} + \prod ECT_{t-1} + \epsilon_{1t} \dots \dots \dots (6)$$

Where D is the difference level of the variable; and  $\alpha_1, \alpha_2, \alpha_3$  ; the long run coefficients of the equations. However, if the series are not co-integrated, there will be no long run coefficient. ECT is the error coefficient term of the long term relationship of the variables and  $\prod t$  are the error coefficient terms of the equations which capture the adjustment of independent variables in the long run towards the dependent variable. Also  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ , are the coefficients of the respective variables of the ECM equation (4) and (6); and  $\gamma_1, \gamma_2, \gamma_3$ , are the coefficients of the respective variables in equation (5). The hypothesis of both the equations is tested on probability value of t-statistics at 5% and 10 % level of significance. However, if the series are not co-integrated, ECM test is carried out without the error correction terms.

**5. RESULTS AND DISCUSSION**

The empirical analysis begins with lag creation. Akaike’s Information Criterion (AIC) has been used to find out the lag order of each variable under study. The Augmented Dickey-Fuller (ADF) test was conducted to pre-test the variables for unit roots to ascertain that the variables are not integrated of an order higher than one. Table 1.1 provides the cumulative distribution of ADF based on Mackinnon (1991).

**TABLE 1.1: ESTIMATED RESULTS OF AUGMENTED DICKEY-FULLER TEST FOR UNIT ROOT**

| Variables | Definition of variables | At level |    |    |       | 1st difference Stationary |    |    |       | Order of Integration |
|-----------|-------------------------|----------|----|----|-------|---------------------------|----|----|-------|----------------------|
|           |                         | t-stat   | 1% | 5% | Prob* | t-stat                    | 1% | 5% | Prob* |                      |
|           |                         |          |    |    |       |                           |    |    |       |                      |



|              |       |             |             |             |              |             |             |             |              |      |
|--------------|-------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------|------|
| <i>GSDP</i>  | GSDP  | <b>3.83</b> | <b>3.64</b> | <b>2.9</b>  | <b>1.00</b>  | <b>3.48</b> | <b>3.36</b> | <b>2.95</b> | <b>0.015</b> | I(1) |
| <i>TEXP</i>  | TEXP  | <b>3.87</b> | <b>4.26</b> | <b>3.5</b>  | <b>0.025</b> |             |             |             |              | I(0) |
| <i>REXP</i>  | REXP  | <b>1.14</b> | <b>2.65</b> | <b>1.9</b>  | <b>0.95</b>  | <b>0.03</b> | <b>4.27</b> | <b>3.5</b>  | <b>0.001</b> | I(1) |
| <i>CEXP</i>  | CEXP  | <b>5.54</b> | <b>4.26</b> | <b>3.55</b> | <b>0.004</b> |             |             |             |              | I(0) |
| <i>EXPSS</i> | EXPSS | <b>1.62</b> | <b>4.3</b>  | <b>5.9</b>  | <b>0.755</b> | <b>5.5</b>  | <b>4.28</b> | <b>3.5</b>  | <b>0.005</b> | I(1) |
| <i>EXPES</i> | EXPES | <b>2.87</b> | <b>4.26</b> | <b>3.5</b>  | <b>0.18</b>  | <b>7.5</b>  | <b>4.2</b>  | <b>3.5</b>  | <b>0.000</b> | I(1) |
| <i>EXPGS</i> | EXPGS | <b>2.25</b> | <b>3.71</b> | <b>2.98</b> | <b>0.99</b>  | <b>3.68</b> | <b>4.35</b> | <b>3.59</b> | <b>0.041</b> | I(1) |

**M Mackinnon (1991) \* 1% level of significance \*\* 5% level of significance**

The results suggest that the null hypothesis is accepted for level data for all the variables, except for total expenditure and capital expenditure, which are non-stationary at level. Controlling the variables at differenced data the computed ADF test shows that the null hypothesis is not accepted for GSDP, REXP, EXPSS, EXPES and EXPGS at first order of difference at 1% and 5% level of significance and the variables are integrated of order one i.e., I(1). TEXP and CEXP are stationary at level with order of integration I(0).

**TABLE: 1.2. GRANGER CAUSALITY TEST**

| Pairwise Granger Causality Tests   |     |             |        |           |
|------------------------------------|-----|-------------|--------|-----------|
| Sample: 1980 2013                  |     |             |        |           |
| Lags: 2                            |     |             |        |           |
| Null Hypothesis:                   | Obs | F-Statistic | Prob.  | Decision  |
| TOTEXP does not Granger Cause GSDP | 33  | 0.18904     | 0.8288 | Accepted  |
| GSDP does not Granger Cause TOTEXP |     | 8.84072     | 0.0011 | Rejected* |
| TCEXP does not Granger Cause GSDP  | 33  | 0.78912     | 0.4644 | Accepted  |
| GSDP does not Granger Cause TCEXP  |     | 2.21709     | 0.1284 | Accepted  |
| REXP does not Granger Cause GSDP   | 33  | 0.87412     | 0.4287 | Accepted  |
| GSDP does not Granger Cause REXP   |     | 7.05133     | 0.0034 | Rejected* |
| EXPGS does not Granger Cause GSDP  | 33  | 0.10955     | 0.8966 | Accepted  |
| GSDP does not Granger Cause EXPGS  |     | 1.45260     | 0.2517 | Accepted  |
| EXPES does not Granger Cause GSDP  | 33  | 0.47289     | 0.6283 | Accepted  |
| GSDP does not Granger Cause EXPES  |     | 2.34734     | 0.1148 | Accepted  |
| EXPSS does not Granger Cause GSDP  | 33  | 0.55695     | 0.5794 | Accepted  |
| GSDP does not Granger Cause EXPSS  |     | 7.93367     | 0.0019 | Rejected* |

Source: Calculated by Author; \* 5% level of significance

From the Granger causality test conducted on the fiscal aggregates we may make the following inferences: (i) unidirectional causality runs from GSDP to total expenditure, where GSDP affects total expenditure but total expenditure has no impact on GSDP (ii) unidirectional causality runs from GSDP to expenditure on social services; (ii) unidirectional causality runs from GSDP to revenue expenditure; (iii) unidirectional causality runs from GSDP to expenditure on social services.

An indication of the direction of causality from Granger test statistics is not adequate for the final conclusion. Even though feedbacks exist, it remains to be seen whether such feedbacks are strong or weak. For such estimation, we move to a consideration of the OLS multivariate model.

### 6.1. CO-INTEGRATION TEST

Having determined that the variables are stationary at integral order of I (1) and I (0), we perform the Johansen co-integration test (1991) for the variables included under the different model equations to examine whether there exists more than a single co-integration relationship between economic growth (GSDP) and the government expenditure variables and to know whether or not the variables in each model have long run association. The co-integration test for each model is shown in table 1.3, 1.4, 1.5, respectively. The null hypothesis tested for each co-integration test is there are 'r' numbers of co-integration vectors for each variable in the model.

**TABLE: 1.3: ESTIMATED RESULTS OF COINTEGRATION TEST FOR MODEL I:**

|  |            |           |                |         |
|--|------------|-----------|----------------|---------|
| Sample (adjusted): 1980- 2013  |            |           |                |         |
| Included observations: 32 after adjustments  |            |           |                |         |
| Trend assumption: Linear deterministic trend   |            |           |                |         |
| Series: LNGSDP LNTEXP  |            |           |                |         |
| Lags interval (in first differences): 1 to 1   |            |           |                |         |
| Unrestricted Cointegration Rank Test (Trace)   |            |           |                |         |
| Hypothesized   |            | Trace     | 0.05           |         |
| No. of CE(s)   | Eigenvalue | Statistic | Critical Value | Prob.** |
| None   | 0.361358   | 15.26781  | 15.49471       | 0.0541  |
| At most 1  | 0.028300   | 0.918646  | 3.841466       | 0.3378  |
| Trace test indicates no cointegration at the 0.05 level* denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values |            |           |                |         |

**TABLE: 1.4: ESTIMATED RESULTS OF COINTEGRATION TEST FOR MODEL II:**

|   |                 |                 |                 |               |
|---|-----------------|-----------------|-----------------|---------------|
| Sample (adjusted): 1980 2013  |                 |                 |                 |               |
| Included observations: 32 after adjustments   |                 |                 |                 |               |
| Trend assumption: Linear deterministic trend  |                 |                 |                 |               |
| Series: LNGSDP LNREXP LNCEXP  |                 |                 |                 |               |
| Lags interval (in first differences): 1 to 2  |                 |                 |                 |               |
| Unrestricted Cointegration Rank Test (Trace)  |                 |                 |                 |               |
|   |                 |                 |                 |               |
| <b>None *</b>   | <b>0.498066</b> | <b>38.65752</b> | <b>29.79707</b> | <b>0.0037</b> |
| <b>At most 1 *</b>  | <b>0.407500</b> | <b>17.28962</b> | <b>15.49471</b> | <b>0.0266</b> |
| At most 2   | 0.033743        | 1.064102        | 3.841466        | 0.3023        |
|   |                 |                 |                 |               |
| * denotes rejection of the hypothesis at the 0.05 level, Trace test indicates 2 cointegrating eqn(s) at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values |                 |                 |                 |               |

**TABLE: 1.5: ESTIMATED RESULTS OF COINTEGRATION TEST FOR MODEL II:**

|  |  |  |  |  |
|--|--|--|--|--|
| Sample (adjusted): 1980 2013                 |  |  |  |  |
| Included observations: 32 after adjustments  |  |  |  |  |
| Trend assumption: Linear deterministic trend |  |  |  |  |
| Series: LNEXPES LNEXPGS LNEXPSS LNGSDP       |  |  |  |  |

|   |                 |                 |                 |               |
|---|-----------------|-----------------|-----------------|---------------|
| Lags interval (in first differences): 1 to 2  |                 |                 |                 |               |
| Unrestricted Cointegration Rank Test (Trace)  |                 |                 |                 |               |
| Hypothesized  |                 | Trace           | 0.05            |               |
| No. of CE(s)  | Eigenvalue      | Statistic       | Critical Value  | Prob.**       |
| None  | 0.556307        | 42.77026        | 47.85613        | 0.1383        |
| At most 1   | 0.279270        | 17.57897        | 29.79707        | 0.5972        |
| <b>At most 2*</b>   | <b>0.212960</b> | <b>17.42674</b> | <b>15.49471</b> | <b>0.0286</b> |
| At most 3   | 9.64E-05        | 0.002990        | 3.841466        | 0.9548        |
| * denotes rejection of the hypothesis at the 0.05 level; Trace test indicates no cointegration at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values |                 |                 |                 |               |

The co-integration test of each model indicates that in model I there is no co-integration vector equation between the variables which means that there is no long run relationship between GSDP and total expenditure. The null hypothesis for this models is not accepted as the trace static indicates the model is not co-integrated as the Trace statistic as well as Max-Eigen statistic is not significant at 1% and 5% level of significance. This implies that variables GSDP and total expenditure in Model I do not have any long run association. For this model we can use the VAR model to generate the short run relationship and the error term. On other hand, the Trace static and Max-Eigen statistic shows that Models II and III have one and more than one co-integrated vectors. Table 1.4 shows that there is long run association between the three variables taken, as the trace statistic and Max-Eigen statistic rejects the null hypothesis of no co-integration at 5% level of significance indicating that at least one co-integrated equation exists between the variables. Similarly Table 1.5 shows long run association between GSDP, EXPSS, EXPES and EXPGS. The Trace statistic and Max-Eigen statistic indicates that there are at least 2 co-integrated equations at 5% level of significance and 2 co-integrated equations at 1% level of significance. Thus it accepts the null hypothesis of 'r' number of co-integrating equations. Thus for Models II and III we can use ARDL model to generate short run as well as long run estimates. We can also examine the Error correction term for short run adjustment of the variables.

### 7. RESULTS OF THE MODELS

Having verified the three aforementioned models for identifying the relationship between government expenditure aggregates and economic growth (GSDP) we determined that there is no cointegration relationship between GSDP and total expenditure (TEXP). The VAR model was used in model 1 for estimating the short run estimates and also to generate the error term. Model 1, was modified as below:

#### MODEL I

|  |            |            |             |       |
|--|------------|------------|-------------|-------|
| Dependent Variable: DLNGSDP  |            |            |             |       |
| Method: Least Squares (Gauss-Newton / Marquardt steps)                                     |            |            |             |       |
| Sample (adjusted): 1980 2013   |            |            |             |       |
| Included observations: 32 after adjustments  |            |            |             |       |
| DLNGSDP = C(1)*DLNGSDP(-1) + C(2)*DLNGSDP(-2) + C(3)*DLNTEXP(-1) + C(4)*DLNTEXP(-2) + C(5) |            |            |             |       |
|  | Coefficien |            |             |       |
|  | t          | Std. Error | t-Statistic | Prob. |

|                    |           |                    |           |          |
|--------------------|-----------|--------------------|-----------|----------|
| DlnGSDP(-1)        | -0.134694 | 0.183210           | -0.735189 | 0.4688   |
| DlnGSDP(-2)        | 0.349571  | 0.179387           | 1.948702  | 0.0622   |
| DlnTEXP(-1)        | 0.013696  | 0.043161           | 0.317327  | 0.7535   |
| DlnTEXP(-2)        | 0.035560  | 0.034368           | 1.034689  | 0.3103   |
| C                  | 0.025907  | 0.010568           | 2.451512  | 0.0213   |
| R-squared          | 0.575731  | Durbin-Watson stat |           | 1.775110 |
| Adjusted R-squared | 0.548920  |                    |           |          |

Source: Calculated by Author; \* 5% level of significance

The estimated results showed that GSDP of lag 2 has a positive and significant impact on current GSDP. This suggests that GSDP two years prior to current year has a positive impact on the current years GSDP.

The interpretation here could be along the following lines. A higher level of GSDP in year '0' leads to higher disposable incomes in years '1' and '2' which raises the income levels in the two latter years. However this increase in income is seen to work itself out in two years' time in the absence of any further autonomous increase in the state's GSDP. The implication is that income growth is not a self-sustaining process in the state of Assam. This result is in line with the findings of Yilgor (2012); Gacener (2005).

Aggregate expenditure of the government,  $TEXP_t$ , undertaken in prior years, has a positive but insignificant impact on the current year income,  $GSDP_t$ . The implication here is that increased expenditure by the state is not directed at income augmenting sectors to any considerable extent. In all probability it does not enhance the asset base of the economy. Add to this fact our earlier observation that there has been an increase in the ratio of allocations in favour of non-development activity as also away from economic services towards social sector spending. Given the low level of social and economic infrastructure and the depressed levels of the state's social indicators it is inevitable that inadequate spending initiatives would not translate into any meaningful positive movement in the state aggregate income. This explains the weakness of the relationship running from total expenditure to GSDP. The direction is right but the magnitude is feeble. The R square of the series shows that 57 per cent variation in economic growth is explained by total expenditure and the rest by other factors.

### Model II

|  |             |            |             |        |
|--|-------------|------------|-------------|--------|
| Dependent Variable: LNGSDP                                 |             |            |             |        |
| Method: ARDL   |             |            |             |        |
| Sample (adjusted): 1980 2013                               |             |            |             |        |
| Included observations: 32 after adjustments                |             |            |             |        |
| Maximum dependent lags: 2 (Automatic selection)            |             |            |             |        |
| Model selection method: Akaike information criterion (AIC) |             |            |             |        |
| Dynamic regressors (1 lag, automatic): LNCEXP LNREXP       |             |            |             |        |
| Selected Model: ARDL(2, 1, 1)                              |             |            |             |        |
|  |             |            |             |        |
| Variable   | Coefficient | Std. Error | t-Statistic | Prob.* |
| LNGSDP(-1)   | 0.772226    | 0.165681   | 4.660913    | 0.0001 |
| LNCEXP   | 0.000709    | 0.020580   | 0.034473    | 0.0628 |
| LNCEXP(-1)   | 0.031309    | 0.018746   | 1.670153    | 0.0074 |

|  |           |                    |           |          |
|--|-----------|--------------------|-----------|----------|
| LNREXP   | 0.141456  | 0.074668           | 1.894454  | 0.0698   |
| LNREXP(-1)   | -0.136470 | 0.060349           | -2.261339 | 0.0327   |
| ECT  | -0.552383 | 0.467019           | -1.182784 | 0.0480   |
| R-squared  | 0.746564  | Durbin-Watson stat |           | 2.207600 |
| Adjusted R-squared                                       | 0.795740  |                    |           |          |
| Source: Calculated by Author; * 5% level of Significance |           |                    |           |          |

We now turn our attention to Model II. Here we note that GSDP of the previous year has a positive and significant relationship with the current year's GSDP in contrast to Model I where we noticed a negative impact of the previous year's GSDP to current year GSDP. The difference between the two models is the association of total public expenditure alone with GSDP in Model I whereas in Model II we have considered GSDP with revenue expenditure and capital expenditure. We note that capital expenditure has a positive impact on GSDP. The results show that a 1% increase in capital expenditure in the current year leads to a 0.007% increase in GSDP which is significant at the 10% level. However, a 1% increase in capital expenditure in the previous year has a higher level of impact on the current year's GSDP (0.03%) which is significant at the 5% level. These results are in line with the findings of Yilmaz and Kaya (2005) Altay and Altin (2008).

The economic implication of Model II is that capital expenditure has a positive though weak impact on the level of GSDP. This positive impact is barely noticeable in the first year but rises in the second year when income enhancing activity fructifies in the second year. However the increase in GSDP set in motion by increased capital expenditure by the government and has no noticeable impact in the long run. We hasten to add that much of what goes into the sub-component capital expenditure has little to do with additions to the productive base of the economy. Much of it is taken up by debt redemption\_ internal market loans and debt owed to the central government. This explains to a great extent the weak relation between capital expenditure of the State with growth in the GSDP. Any impact of productive capital expenditure on the creation of assets which emanates from the government's capital outlay and loans to the producing sectors in the market economy is blanked by the huge outlays on debt redemption.

Similarly, revenue expenditure of the current year has a positive and significant (at 10% level of significance) effect on GSDP while revenue expenditure of previous year has a negative impact on current year's GSDP. The estimated results show that a 1% increase in current year revenue expenditure results in 0.14% increase in current year's GSDP while a 1% increase in the previous year's revenue expenditure results in a decrease of 0.13% (significant at the 5% level of significance) in GSDP. This is only to be expected given the previous explanations regarding the link between GSDP on one hand and total, revenue and capital expenditure on the other.

The error correction term (ECT) is negative (0.5523) and is statistically significant at 5% level of significance. It reveals the evidence of a speedy response to equilibrium in GSDP when there are shocks in the short run. The negative coefficient of ARDL model determines the speed of adjustment to long run equilibrium by independent variables. In other words it indicates that any shock that takes place in the short run through capital and revenue expenditure to GSDP would be corrected in the long run by 55% per annum i.e., within a period of approximately two years.

The table shows that the model explains a significant proportion of variability of the GSDP series. The R square of the series shows that 74 per cent variation in economic growth in the state is explained by revenue and capital expenditures and the rest by other factors.

**Model III**

| Dependent Variable: LNGSDP                                     |             |                    |             |          |
|--|-------------|--------------------|-------------|----------|
| Method: ARDL   |             |                    |             |          |
| Sample (adjusted): 1980 2014                                   |             |                    |             |          |
| Included observations: 32 after adjustments                    |             |                    |             |          |
| Maximum dependent lags: 2 (Automatic selection)                |             |                    |             |          |
| Model selection method: Akaike info criterion (AIC)            |             |                    |             |          |
| Dynamic regressors (1 lag, automatic): LNEXPSS LNEXPES LNEXPGS |             |                    |             |          |
| Number of models evaluated: 16                                 |             |                    |             |          |
| Selected Model: ARDL(2, 1, 0, 0)                               |             |                    |             |          |
| Variable   | Coefficient | Std. Error         | t-Statistic | Prob.*   |
| LNGSDP(-1)   | 0.742031    | 0.167649           | 4.426094    | 0.0002   |
| LNGSDP(-2)   | 0.243269    | 0.176363           | 1.379366    | 0.1800   |
| LNEXPSS  | 0.003247    | 0.062685           | 0.051798    | 0.0591   |
| LNEXPSS(-1)  | -0.092953   | 0.047166           | -1.970789   | 0.0599   |
| LNEXPES  | 0.056153    | 0.025855           | 2.171849    | 0.0396   |
| LNEXPGS  | 0.062157    | 0.036965           | 1.681491    | 0.1051   |
| ECT  | -0.078443   | 0.357495           | -0.219423   | 0.0281   |
| R-squared  | 0.696495    | Durbin-Watson stat |             | 2.091958 |
| Adjusted R-squared   | 0.775653    |                    |             |          |

Source: Calculated by Author; \* 5% level of Significance

From the estimated results of Model III above, the following results are evident. Firstly, in the long run, expenditure on social service (EXPSS) and expenditure on economic services (EXPES) exerts a positive and significant impact on long run GSDP while expenditure on general services (EXPGS) has a positive but insignificant impact on GSDP. These results suggest that a 1 % increase in EXPSS in the current year, results in 0.003 % increase in GSDP with a 10% level of significance whereas in the short run a 1 % increase in EXPSS in the previous year results in a negative (-0.093 %) impact on GSDP which is significant at the 10% level of significance. We may surmise that EXPSS in the current year leads to an increase in GSDP through the income route with no visible or substantial impact on the productive capacity of the economy over time. EXPSS is mainly concentrated around activities such as health, water, sanitation etc., and these expenditures take a sufficiently long period of time to show results in terms of an increase in the productive capacity of the economy. The low level of development of the state's human resources evident from the low values for each of the social sector indicators implies that increased expenditure here cannot leverage upon the skill base of the population to raise the level of growth in aggregate GSDP.

Expenditure on economic services has positive and significant impact on economic growth as measured by GSDP. The Table shows that 1 per cent increase in expenditure on economic services in current year will increase GSDP by 0.056 per cent in the current year. The model suggests expenditure on economic services has an immediate impact on GSDP in the state. This result explains the economic state of Assam where expenditure on economic services has a positive impact on GSDP, though the magnitude of this is miniscule. It suggests that an increase in expenditure on various economic services such as transport, communication, agriculture,



industry, irrigation to name a few, could boost the economic activity in the state and eventually create a momentum for higher economic growth (GSDP).

Over the long run, expenditure on general services (EXPGS) has a positive but insignificant impact on GSDP. This is as it should be. The state has a long history of strife and political upheaval. Also the law and order situation is not congenial for investment activity to take root. What is more important that though funds allocated to this sector has seen a steady increase not much by way of better governance has been achieved. At the same time the general ambience or the rule of law has not seen any noticeable improvement. Given this state of affairs increased expenditure on general services has not translated into any significant achievements on the growth front. We may also add that increased levels of employment in the state sector and enhanced salaries are doled out across the board to all government employees and has nothing to do with their utility in the economic or social sphere. A more efficient and streamlined administrative set up and attention to the law and order situation could lead to better growth outcomes.

The error correction term (ECT) is negative (-0.078) and is statistically significant at 5% level of significance. This reveals the evidence of slow pace of response to equilibrium in GSDP when there are shocks in the short run. The negative coefficient of ARDL model determines the speed of adjustment to long run equilibrium by independent variables. In other words it indicates that any shock that takes place in GSDP in the short run through expenditure on social, economic and general services would take a period of around 12 years to work themselves out and correct the long run equilibrium situation. The R square of the series shows that 69 per cent variation in economic growth is explained by the expenditures on social, economic and general services and the rest by other factors.

Various diagnostic tests have been conducted to find out the adequacy of data and fitness of the results. The results of those tests show that our models do not suffer from the problem of serial correlation, heteroskedasticity, and that the observations are normally distributed.

## **8. CONCLUSION:**

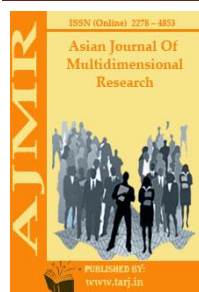
This study investigates the interrelationship between growth in GSDP and alternative public expenditure aggregates for the state of Assam over the period 1980-2013. The study examines the presence of a cointegrating relationship between alternative fiscal aggregates and gross state domestic product and further applies the techniques of General to Specific, Granger causality, Johansen's cointegration and ARDL or ECM to determine the direction and robustness of causality between income on one hand and alternative public expenditure aggregates on the other. The study shows the presence of Wagner's law of increasing state activities which implies that it is GSDP which drives public expenditure and not the other way round. Our study has highlighted that capital expenditure has a positive impact on GSDP though the magnitude of impact is minimal. This could be a pointer to various leakages and constraints in the fiscal process, the lack of direction in capital expenditure and co-opting of funds for debt redemption rather than for increased outlay on productivity enhancing social and economic infrastructure. Similarly, expenditure on social and economic services, considered to be instrumental in raising the growth impetus were found to be less effective in the short as well as in the long run. Given the nature of public spending in the state of Assam, the fiscal variables mentioned in our study were ineffective, to say the least, and took a fairly long period of time to correct any disequilibrium in economic growth proxied by GSDP.

The above leads us to the belief that the public spending mechanism in the state of Assam is not geared to the needs of the economy and nor is it rationalised across sectors. Going forward the state administration has to reconsider its expenditure mix tilting the favour towards capital expenditures with an emphasis on real capital outlay as well as a more judicious mix of expenditure on social and economic services. Funds flows have to be closely monitored with a wider application of cost –benefit analysis which to our knowledge is singularly absent in the current scenario.

#### REFERENCES:

- Altay, O. & Altin, O. (2008) The analysis of the impacts of Public expenditures on economic growth and investment in Turkey (1980-2005), *Ege Academic Review*, 8, (1), 267-285
- Asimakopoulous, S. and Karavias, Y. (2015). The impact of government size on economic growth: a threshold analysis. Granger Centre Discussion Paper No. 15/02
- Bell, C. & Rousseau, P. (1999): Post independence India: a case of finance led industrialisation. Vanderbilt University, Nashville, Tennessee, U.S.A.
- Gacener, A. (2005). Analysis of Turkey in terms of the validity of the Wagner Act. *DEU IIBFDergisi*, 20, (1) 103-122
- Gemmell, N., Kneller, R., & Sanz, I. (2014). Does the composition of government expenditure matter for long-run GDP levels? Working Paper, Chair in Public Finance, Victoria University of Wellington, New Zealand. <http://dx.doi.org/10.2139/ssrn.2484917>
- Grier, K. and Tullock, G. (1989) ‘An empirical analysis of cross national economic growth, 1951–1980,’ *Journal of Monetary Economics*, 24, (1), 259–276
- Hassan S, Mishra B (2017) Does infrastructure matter in government spending? A case study of Jammu and Kashmir (India) with co-integration approach. *Journal of Infrastructural Development*, 9 (2):1–16
- Hassan S., Mishra, B. and Suresh, P. (2016a). A multi-dimensional approach to the determinants of tax revenue: the case of the state of Jammu and Kashmir (India). *Journal of Finance and Risk Management*, 7 (3), 66 -104.
- Hassan S.U., Mishra B., Suresh, P. (2016b). An analysis of productivity and efficiency of tax system in the state of Jammu and Kashmir. *International Journal of Business and Economic review*, 4 (1), 208-226.
- Hassan, S. and Mishra, B. (2017). Government expenditure and economic growth in the state of Jammu and Kashmir: a unit root and co-integration approach with error correction model. *International Journal of Statistics and Economics*. 18 (2), 58-86.
- Hassan, S. and Mishra, B. (2017). Growth efficiency and productivity of government expenditure in the state of Jammu and Kashmir (India). *Journal of Economics*, 116, 260-276.
- Henry, O. and Olekalns, N. (2000). The displacement hypothesis and government spending in the United Kingdom: Some new long-run evidence. Department of Economics - Working Papers Series 750, The University of Melbourne.
- India: a case study of Meghalaya. In P. Nayak (Ed.), *Growth and Human Development in*
- Jerono, C.R. (2009) ‘Government Expenditure Components on Economic Growth in Kenya,’ *International Journal of Business and Social Science*, 4, (4), 256-279

- Jerono, C.R. (2009). Government expenditure components on economic growth in Kenya. *International Journal of Business and Social Science*.4, (4). 256-279
- Kumar, S. Webber, D. and Fargher, S. (2012) Wagner's law revisited: Cointegration and causality tests for New Zealand. *Applied Economics*, 44 (5). 607-616.
- Magazzino, C. Giolli, L. and Mele, M.(2015) Wagner's law and Peacock and Wiseman's displacement effect in European Union countries: a panel data study. *International Journal of Economics and Financial Issues*, 5(3), 812-819.
- Mishra, B. (2006). *Fiscal policy in north east India*. New Delhi: Akansha Publishing House.
- Mishra, B., Suraesh, P. S. and Ovung, K.Z. (2005). Political economy of public expenditure growth in north eastern states of India: A case study of Nagaland. *Asian- African Journal of Economics*. 5 (1), 17-33.
- Patricia, C., & Izuchukwu, C. (2013). Impact of government expenditure on economic growth in Nigeria. *International Journal of Business and Management Review*, 1(4), 64-71.
- Peacock, A. and Wiseman, J. (1961). *The growth of public expenditure in the United Kingdom*. Princeton. N. J.: Princeton University Press.
- Rao, M. (2015). Central transfers to states in India rewarding performance while ensuring equity: Final report of a study submitted to NITI Aayog. Available at [http://niti.gov.in/writereaddata/files/document\\_publication/Report%20on%20CENTRAL%20TRANSFERS%20TO%20STATES%20IN%20INDIA.pdf](http://niti.gov.in/writereaddata/files/document_publication/Report%20on%20CENTRAL%20TRANSFERS%20TO%20STATES%20IN%20INDIA.pdf)
- Singh, B. and Sahni, B. (1984). Causality between public expenditures and national income,' *Review of Economics and Statistics*, 56, 630-644.
- Suresh, P. and Mishra, B. (2010). Public expenditure and human development in north-east India: a case study of Meghalaya. In P. Nayak (Ed.), *Growth and Human Development in North-East India*, New Delhi: Oxford University Press. 233-243.
- Tang, T. (2009). Wagner's law versus Keynesian hypothesis in Malaysia: An impressionistic view. Monash Economics Working Papers, 21-09, Monash University, Department of Economics.
- Torki, M. Al-Fawwaz, I. (2016). The Impact of Government Expenditures on Economic Growth in Jordan (1980-2013). *International Business Research*, 9, (1), 99-105.
- Yilgor, M., Ertugrul, C., & Celepcioglu, M. (2012). The effect of public expenditure on economic growth: Turkey example. *Investment Management and Financial Innovations*, 9 (2), 193-202.
- Yilmaz, Ö. and Kumar, V. (2008). Regional public expenditure and regional economic growth relationship: panel data analysis for Turkey,' *Ataturk University Journal of the Institute of Social Science*, 12, (2), 413-426



## CAPITAL STRUCTURE ANALYSIS OF A SMALL ENTERPRISE - A CASE STUDY OF RADHIKA VEGETABLE OILS PRIVATE LIMITED

Dr. Venkateswararao. Podile\*; Fr. Kataru Anil Kumar\*\*; Dr. Ch. Hema Venkata Siva Sree\*\*\*

\*Professor & Principal Investigator,  
Project: DST/NSTMIS/05/04/2017-18  
Andhra Loyola Institute of Engineering and Technology,  
Opp. Poly Technic Post office, Vijayawada,  
Andhra Pradesh, INDIA  
Email id:vraopodile@gmail.com

\*\*Assistant Director,  
Andhra Loyola Institute of Engineering and Technology,  
Opp. Poly Technic Post office, Vijayawada,  
Andhra Pradesh, INDIA  
Email id:kataruanilkumarsj@gmail.com

\*\*\*Co-Investigator,  
Project: DST/NSTMIS/05/04/2017-18  
Vijayawada, Andhra Pradesh, INDIA.  
Email id:dreamworld7982@gmail.com

### ABSTRACT

*Capital structure refers to the combination of debt and equity. The financial manager has to strike a balance between various sources of funds so as to maximise return of an Enterprise without affecting risk composition in the business. An optimal capital structure is very much essential to maximise the owner's wealth of any Enterprise. In this paper, an attempt is made to analyse the capital structure in Radhika Vegetable Oils Private Limited. Radhika Vegetable Oils Private Limited is an Indian unlisted private Enterprise in the state of Andhra Pradesh. It was located at Garividi of Vizianagaram District. It is engaged in production, extraction and delivery of palm oil to major Vanaspati makers in India. This Small Enterprise has an annual turnover of Rs.2719.51 lakhs and total Assets of the company are Rs.993.4 lakhs as per 2015-16 accounts. In this paper composition of capital structure in the enterprise for a period of ten years is analysed. Leverage analysis was also done. Debt- Equity ratio, Proprietary Ratio, Solvency Ratio, Fixed*

*Assets to Net worth Ratio, Fixed Assets Ratio, Current Assets to Proprietary Ratio and Interest Coverage Ratio are calculated for the study period. Chi-square test is used for testing Hypotheses.*

**KEYWORDS:** *Capital Structure, Degree Of Combined Leverage, Degree Of Financial Leverage, Fixed Assets Ratio, Interest Coverage Ratio, Solvency Ratio*

## INTRODUCTION

Capital structure refers to the combination of debt and equity. The financial manager has to strike a balance between various sources of funds so as to maximise return of an Enterprise without affecting risk composition in the business. An optimal capital structure is very much essential to maximise the owner's wealth of any Enterprise. In this paper, an attempt is made to analyse the capital structure in Radhika Vegetable Oils Private Limited is an Indian unlisted private company in the state of Andhra Pradesh. It was located at Garividi of Vizianagaram District. It was started in 1984. It is engaged in production, extraction and delivery of palm oil to major Vanaspati makers in India. It was the first company in India to import Oil Palm sprouts and to start a 5MT per hour extraction unit. Radhika Vegetable Oils Private Limited today sources palm fruit from over Fifteen thousand acres of assisted plantations in over ten mandals within Andhra Pradesh. This Small Enterprise has an annual turnover of Rs.2719.51 lakhs as per 2015-16 accounts. The total Assets of the company are Rs.993.4 lakhs. The Enterprise had provided employment to fifty people.

## REVIEW OF LITERATURE

J. H. Chua et al., (1993)<sup>1</sup> made a study on the capital structure of forty three private companies in Canada from 1993-1998. Shyam-Sunder, L. et al., (1999)<sup>2</sup> studied on the pecking order Models for corporate financing in one hundred fifty seven industrial units in US existed between 1971 and 1989. Kaur, R. et al., (2009)<sup>3</sup> investigated on the determinants of capital structure in eight best doing Textile units in India from 2003-04 to 2007-08. Bhayani, S. J (2009)<sup>4</sup> had conducted study on impact of Financial Leverage on cost of capital and valuation of Indian cement Industry. Dr. A.Vijayakumar (2011)<sup>5</sup> examined the trade-off and pecking order hypotheses in twenty automobile firms in India and found that more profitable companies had less debt. S. Ramaratnam et al., (2013)<sup>6</sup> examined the determinants of capital structure in Pharmaceutical companies in India. Thomas, A. E (2013)<sup>7</sup> examined the capital structure of twenty one units in Indian cement industry from 2003-04 to 2007-08. Srivastava, N., (2014)<sup>8</sup> had examined the determinants of leverage in ten cement companies in India over a period of 2008-2012. Lyubomira Koeva-Dimitrova (2016)<sup>9</sup> had analyzed the capital structure of the medical diagnostic-consultative centres in Varna city for the purpose of assessing their long-term solvency and existence of financial risk. Radojko Lukić et al., (2016)<sup>10</sup> investigated the determinants of capital structure in Serbia's commercial sector. Venkateswararao.Podile (2017)<sup>11</sup> had examined the recent MSME policy of Andhra Pradesh. Venkateswararao.Podile et al., (2017)<sup>12</sup> examined working capital management in PL Plast Pvt Ltd. Venkateswararao.Podile et al., (2017)<sup>13</sup> had examined various Government schemes supporting MSMEs in India. Chandrika Prasad Das et al., (2018)<sup>14</sup> had conducted a study in India to find out the determinants of capital structure and their impact on financial performance by using secondary data taken from fifty top manufacturing companies and by using regression model. Venkateswararao.Podile et al., (2018)<sup>15</sup> examined working capital management in Sri Rama Chandra Paper Boards Ltd.



Venkateswararao.Podile (2018)<sup>16</sup> examined working capital management in Tulasi seeds Pvt.Ltd. Venkateswararao.Podile et al., (2018)<sup>17</sup> studied working capital management in Sri Nagavalli solvent oils Pvt. Ltd. Venkateswararao.Podile et al., (2018)<sup>18</sup> analysed working capital management in Naga Hanuman Solvent Oils Private Limited. Venkateswararao.Podile (2018)<sup>19</sup> examined working capital management in Cuddapah Spinning Mills Ltd. Venkateswararao.Podile et al., (2018)<sup>20</sup> studied working capital management in Kristna Engineering Works. Venkateswararao.Podile et al., (2018)<sup>21</sup> examined working capital management in Radhika Vegetables Oils Pvt. Ltd. Venkateswararao.Podile et al., (2018)<sup>22</sup> examined working capital management in Power Plant Engineering Works in Andhra Pradesh. Venkateswararao.Podile et al., (2018)<sup>23</sup> examined working capital management in Nagas Elastomer Works. Venkateswararao.Podile et al., (2018)<sup>24</sup> had studied working capital management in M.G.Metallic Springs Pvt. Ltd. Venkateswararao.Podile et al., (2018)<sup>25</sup> had studied working capital management in Sri Srinivasa Spun Pipes Company. Venkateswararao.Podile et al., (2018)<sup>26</sup> had studied working capital management in Raghunath Dye Chem Pvt. Ltd. Venkateswararao.Podile et al., (2018)<sup>27</sup> had examined working capital management in Maitreya Electricals Pvt. Ltd. Venkateswararao.Podile et al., (2018)<sup>28</sup> had examined working capital management in Laxmi Vinay Poly Print Packs Pvt. Ltd. Venkateswararao.Podile et al., (2018)<sup>29</sup> had done capital structure analysis of M.G.Metallic Springs Pvt. Ltd. Venkateswararao.Podile et al., (2018)<sup>30</sup> had done capital structure analysis of Naga Hanuman Solvent Oils Private Limited. Venkateswararao.Podile et al., (2018)<sup>31</sup> had done capital structure analysis of Raghunath Dye Chem Pvt. Ltd. Venkateswararao.Podile et al., (2018)<sup>32</sup> had done capital structure analysis of Nagas Elastomer Works. Venkateswararao.Podile et al., (2018)<sup>33</sup> had done capital structure analysis of Tulasi Seeds Pvt. Ltd. Venkateswararao.Podile et al., (2018)<sup>34</sup> had done capital structure analysis of Bharat Cashew Manufacturing Company. It was found that most of the studies dealt with capital structure in large companies. Some of the studies dealt with MSME policies. Some other studies though dealt with MSMEs, they were confined to working capital management. Few studies dealt with capital structure analysis in MSMEs. There was no study on capital structure analysis of a Small enterprise which is engaged in production, extraction and delivery of palm oil. Hence, this study is taken up.

## OBJECTIVES

The general objective of the study is to analyze the capital structure of Radhika Vegetable Oils Private Limited. The specific objectives include the following.

1. To examine composition of capital structure in Radhika Vegetable Oils Private Limited during the period of study.
2. To analyze the status of Degree of Operating Leverage, Degree of Financial Leverage and Degree of Combined Leverage in Radhika Vegetable Oils Private Limited during the period of study.
3. To investigate long term solvency position Radhika Vegetable Oils Private Limited during the period of study.
4. To examine the coverage of financial expenses in the small enterprise during the period of study.
5. To offer suggestions for improvement of capital structure decisions, if required.



## **HYPOTHESES**

H<sub>01</sub>: Degree of Operating Leverage in Radhika Vegetable Oils Private Limited is uniform during the period of study.

H<sub>02</sub>: Degree of Financial Leverage in Radhika Vegetable Oils Private Limited is uniform during the period of study.

H<sub>03</sub>: Degree of Combined Leverage in Radhika Vegetable Oils Private Limited is uniform during the period of study.

H<sub>04</sub>: Debt - Equity Ratio in Radhika Vegetable Oils Private Limited is uniform during the period of study.

H<sub>05</sub>: Proprietary Ratio in Radhika Vegetable Oils Private Limited is uniform during the period of study.

H<sub>06</sub>: Solvency Ratio in Radhika Vegetable Oils Private Limited is uniform during the period of study.

H<sub>07</sub>: Fixed Assets to Net worth Ratio in Radhika Vegetable Oils Private Limited is uniform during the period of study.

H<sub>08</sub>: Fixed Assets Ratio in Radhika Vegetable Oils Private Limited is uniform during the period of study.

H<sub>09</sub>: Current Assets to Proprietary funds Ratio in Radhika Vegetable Oils Private Limited is uniform during the period of study.

H<sub>10</sub>: Interest Coverage Ratio in Radhika Vegetable Oils Private Limited is uniform during the period of study

## **METHODOLOGY**

The present study is mainly based on secondary data. The data is taken from the financial statements including balance sheet, trading account and profit and loss account of Radhika Vegetable Oils Private Limited. The period of study is ten years covering the financial years from 2006-07 to 2015-16. The data gathered is analyzed through the technique of percentages and certain appropriate ratios relating to capital structure of the enterprise. Degree of Operating Leverage, Degree of Financial Leverage and Degree of Combined Leverage are calculated during study period for leverage analysis. The ratios covered include Debt – Equity Ratio, Proprietary Ratio, Solvency Ratio, Fixed Assets to Net worth Ratio, Fixed Assets Ratio, Current Assets to Proprietary Ratio and Interest Coverage Ratio. Chi-square test is used for testing the hypotheses formed.

## **COMPOSITION OF CAPITAL STRUCTURE**

The data in table-1 represent the fact that Share capital as a percentage of total equity capital has varied between 16.8 during 2012 and 49.2 during 2016. It is also observed that reserves and surplus as a percentage of total equity capital had varied between 50.8 during 2016 and 83.2 during 2012. Total equity capital as a percentage of total capital has varied between 18.0 during 2016 and 98.2 during 2007. It is also observed that long term debt as a percentage of total debt had varied between 0.2 during 2015 and 80.4 during 2008. On the other hand, short term debt as a percentage of total debt has varied between 19.6 during 2008 and 99.8 during 2015. Total debt capital as a percentage of total capital has varied between 1.8 during 2007 and 82.0 during 2016.

**TABLE-1: STRUCTURE AND COMPOSITION OF CAPITAL STRUCTURE IN RADHIKA VEGETABLE OILS PRIVATE LIMITED DURING 2006-2007 TO 2015-2016 (FIGURES IN LAKHS)**

| Particulars                 | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Equity capital</b>       |       |       |       |       |       |       |       |       |       |       |
| Share Capital               | 87.8  | 87.8  | 87.8  | 87.8  | 87.8  | 87.8  | 87.8  | 87.8  | 87.8  | 87.8  |
| % of Total Equity capital   | 41.8  | 29.8  | 26.2  | 24.0  | 21.4  | 16.8  | 20.5  | 19.8  | 35.7  | 49.2  |
| Reserves & Surplus          | 122.2 | 206.9 | 247.3 | 278.7 | 323.1 | 433.9 | 339.5 | 355.7 | 158.3 | 90.8  |
| % of Total Equity capital   | 58.2  | 70.2  | 73.8  | 76.0  | 78.6  | 83.2  | 79.5  | 80.2  | 64.3  | 50.8  |
| <b>Total Equity Capital</b> | 210   | 294.7 | 335.1 | 366.5 | 410.9 | 521.7 | 427.3 | 443.5 | 246.1 | 178.6 |
| % of Total Capital          | 98.2  | 90.0  | 87.9  | 97.7  | 98.1  | 67.3  | 54.3  | 51.4  | 29.9  | 18.0  |
| <b>Debt Capital</b>         |       |       |       |       |       |       |       |       |       |       |
| Long Term Debt              | 0.6   | 26.2  | 21.7  | 5.0   | 0.8   | 10.7  | 46.4  | 54.1  | 1.1   | 147   |
| % of Total Debt capital     | 15.4  | 80.4  | 47.2  | 57.5  | 10.3  | 4.2   | 12.9  | 12.9  | 0.2   | 18.0  |
| Short Term Debt             | 3.3   | 6.4   | 24.3  | 3.7   | 7.0   | 242.7 | 313.2 | 365.6 | 574.9 | 667.8 |
| % Total Debt capital        | 84.6  | 19.6  | 52.8  | 42.5  | 89.7  | 95.8  | 87.1  | 87.1  | 99.8  | 82.0  |
| <b>Total Debt Capital</b>   | 3.9   | 32.6  | 46    | 8.7   | 7.8   | 253.4 | 359.6 | 419.7 | 576   | 814.8 |
| % of Total Capital          | 1.8   | 10.0  | 12.1  | 2.3   | 1.9   | 32.7  | 45.7  | 48.6  | 70.1  | 82.0  |
| <b>Total Capital</b>        | 213.9 | 327.3 | 381.1 | 375.2 | 418.7 | 775.1 | 786.9 | 863.2 | 822.1 | 993.4 |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016.

### LEVERAGE ANALYSIS

Leverage analysis is useful for understanding the ability of the enterprise to magnify the effect of changes in sales on operating profit, the effect of changes in operating profit on Net Income and the effect of changes in sales on Net Income.

#### Degree of Operating Leverage

The Degree of Operating Leverage has varied between -349.7 and 95.0. Operating leverage is favorable during 2007, 2008, 2012, 2013 and 2016 as DOL is greater than one. Operating leverage is un-favorable during other five years as DOL is less than one. It is found in the significance test that Degree of Operating Leverage is not uniform during the period of study.

**TABLE-2: DEGREE OF OPERATING LEVERAGE (FIGURES IN LAKHS)**

| Years                      | 2007 | 2008  | 2009 | 2010  | 2011 | 2012  | 2013  | 2014  | 2015   | 2016 |
|----------------------------|------|-------|------|-------|------|-------|-------|-------|--------|------|
| Percentage change in EBIT  | 91.2 | 132.9 | -    | 2.7   | 50.6 | 165.0 | 161.5 | 116.7 | 1258.8 | 67.0 |
| Percentage Change in Sales | 75.6 | 14.1  | -    | 600.9 | 54.1 | 76.6  | -1.7  | 31.4  | 3.6    | -4.1 |
| DOL                        | 1.2  | 9.4   | 0.8  | 0.0   | 0.9  | 2.2   | 95.0  | -3.7  | -349.7 | 16.3 |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016

Calculated value of  $\chi^2$  for Degree of Operating Leverage = 5558.5. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919. Calculated value is greater than Critical Value i.e., 5558.5 > 16.919, Hence,  $H_{01}$  is Rejected.

### Degree of Financial Leverage

The Degree of Financial Leverage has varied between -8.26 and 1.51. Financial leverage is favorable during 2007, 2013 and 2015 as DFL is greater than one. Financial leverage is neither favorable nor un-favorable during 2014. Financial leverage is un-favorable during other six years as DFL is less than one. It is found in the significance test that Degree of Financial Leverage is not uniform during the period of study

**TABLE-3: DEGREE OF FINANCIAL LEVERAGE (FIGURES IN LAKHS)**

| Years                           | 2007  | 2008  | 2009 | 2010 | 2011 | 2012  | 2013  | 2014  | 2015   | 2016 |
|---------------------------------|-------|-------|------|------|------|-------|-------|-------|--------|------|
| Percentage change in Net income | 137.9 | 104.8 | -    | -    | 41.4 | 149.5 | 185.2 | 117.2 | 1318.5 | 65.9 |
| Percentage change in EBIT       | 91.2  | 132.9 | -    | 2.7  | 50.6 | 165.0 | 161.5 | 116.7 | 1258.8 | 67.0 |
| DFL                             | 1.51  | 0.79  | 0.80 | 8.26 | 0.82 | 0.91  | 1.15  | 1.00  | 1.05   | 0.98 |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016

Calculated value of  $\chi^2$  for Degree of Financial Leverage = 1034.7. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919. Calculated value is greater than Critical Value i.e., 1034.7 > 16.919, Hence,  $H_{02}$  is Rejected.

### Degree of Combined Leverage

The Degree of Combined Leverage has varied between -366.25 and 108.94. Combined leverage is favorable during 2007, 2008, 2012, 2013 and 2016 as DCL is greater than one. Combined leverage is un-favorable during other five years as DCL is less than one. It is found in the significance test that Degree of Combined Leverage is not uniform during the period of study.

**TABLE-4: DEGREE OF COMBINED LEVERAGE (FIGURES IN LAKHS)**

| Years                           | 2007  | 2008  | 2009 | 2010  | 2011 | 2012  | 2013   | 2014  | 2015   | 2016  |
|---------------------------------|-------|-------|------|-------|------|-------|--------|-------|--------|-------|
| Percentage change in Net income | 137.9 | 104.8 | -    | -22.3 | 41.4 | 149.5 | -185.2 | 117.2 | 1318.5 | -65.9 |
| Percentage Change in Sales      | 75.6  | 14.1  | 86.6 | 600.9 | 54.1 | 76.6  | -1.7   | 31.4  | 3.6    | -4.1  |
| DCL                             | 1.82  | 7.43  | 0.61 | -0.04 | 0.77 | 1.95  | 108.94 | -3.73 | 366.25 | 16.07 |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016.

Calculated value of  $\chi^2$  for Degree of Combined Leverage = 6063.8. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919. Calculated value is greater than Critical Value i.e., 6063.8 > 16.919, Hence,  $H_{03}$  is Rejected

## CAPITAL STRUCTURE RATIOS

Capital structure ratios are useful for understanding long term solvency of the Enterprise. Long term solvency means ability of the enterprise to meet long term obligations.

### Debt-Equity Ratio

The Debt-Equity ratio of the Enterprise varied between 0.02 during 2007, 2010 and 2011 and 4.56 during 2016. It is found in the significance test that Debt-Equity ratio is not uniform during the period of study. Debt- Equity ratio is less than one during first eight years of the study ensuring high margin of safety for lenders. It is 2.34 during 2015 and even 4.56 during 2016 which reduces margin of safety for lenders.

**TABLE-5: DEBT-EQUITY RATIO (FIGURES IN LAKHS)**

| Years               | 2007 | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|---------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Outside funds       | 3.9  | 32.6  | 46    | 8.7   | 7.8   | 253.4 | 359.6 | 419.7 | 576   | 814.8 |
| Share Holders funds | 210  | 294.7 | 335.1 | 366.5 | 410.9 | 521.7 | 427.3 | 443.5 | 246.1 | 178.6 |
| Debt-Equity Ratio   | 0.02 | 0.11  | 0.14  | 0.02  | 0.02  | 0.49  | 0.84  | 0.95  | 2.34  | 4.56  |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016.

Calculated value of  $\chi^2$  for Debt-Equity Ratio = 20.2. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919. Calculated value is less than Critical Value i.e.,  $20.2 > 16.919$ , Hence,  $H_{04}$  is rejected.

### Proprietary Ratio

The Proprietary ratio of the Enterprise varied between 0.18 during 2016 and 0.98 during 2007, 2010 and 2011. It is found in the significance test that Proprietary ratio is uniform during the period of study. High proprietary ratio during first eight years of the study ensured good long term solvency of the enterprise. Low proprietary ratio during last year decreased long term solvency position.

**TABLE-6: PROPRIETARY RATIO (FIGURES IN LAKHS)**

| Years               | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Share Holders funds | 210   | 294.7 | 335.1 | 366.5 | 410.9 | 521.7 | 427.3 | 443.5 | 246.1 | 178.6 |
| Total Assets        | 213.9 | 327.3 | 381.1 | 375.2 | 418.7 | 775.1 | 786.9 | 863.2 | 822.1 | 993.4 |
| Proprietary Ratio   | 0.98  | 0.90  | 0.88  | 0.98  | 0.98  | 0.67  | 0.54  | 0.51  | 0.30  | 0.18  |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016.

Calculated value of  $\chi^2$  for Proprietary ratio = 1.2. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919 Calculated value is less than Critical Value i.e.,  $1.2 < 16.919$ , Hence,  $H_{05}$  is accepted.

### Solvency Ratio

The Solvency ratio of the Enterprise varied between 0.02 during 2007, 2010 and 2011 and 0.82 during 2016. It is found in the significance test that Solvency ratio is uniform during the period of study. Solvency ratio is comparatively high during last year of the study.

**TABLE-7: SOLVENCY RATIO (FIGURES IN LAKHS)**

| Years                          | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Liabilities to outsiders | 3.9   | 32.6  | 46    | 8.7   | 7.8   | 253.4 | 359.6 | 419.7 | 576   | 814.8 |
| Total Assets                   | 213.9 | 327.3 | 381.1 | 375.2 | 418.7 | 775.1 | 786.9 | 863.2 | 822.1 | 993.4 |
| Solvency Ratio                 | 0.02  | 0.10  | 0.12  | 0.02  | 0.02  | 0.33  | 0.46  | 0.49  | 0.70  | 0.82  |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016

Calculated value of  $\chi^2$  for Solvency ratio = 2.6. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919 Calculated value is less than Critical Value i.e.,  $2.6 < 16.919$ , Hence,  $H_{06}$  is accepted.

### Fixed Assets to Net worth Ratio

The Fixed Assets to Net worth ratio of the Enterprise varied between 0.19 during 2007 and 2.34 during 2016. It is found in the significance test that Fixed Assets to Net worth ratio is uniform during the period of study. Fixed Assets to Net-worth ratio is less than one during the first seven years of the study, indicating that owner funds are more than fixed assets in the enterprise. It is greater than one during last three years of the study. It means that owners funds are not sufficient to finance the fixed assets and enterprise has to depend upon outside funds for this purpose, Which is not good for the enterprise.

**TABLE-8: FIXED ASSETS TO NET WORTH RATIO (FIGURES IN LAKHS)**

| Years               | 2007 | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|---------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Fixed Assets        | 40.7 | 100.6 | 136.1 | 231.3 | 246.9 | 237   | 356.6 | 446.6 | 464.6 | 417.7 |
| Share Holders funds | 210  | 294.7 | 335.1 | 366.5 | 410.9 | 521.7 | 427.3 | 443.5 | 246.1 | 178.6 |
| Ratio               | 0.19 | 0.34  | 0.41  | 0.63  | 0.60  | 0.45  | 0.83  | 1.01  | 1.89  | 2.34  |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016.

Calculated value of  $\chi^2$  for Fixed Assets to Net worth ratio = 5.2. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919 Calculated value is less than Critical Value i.e.,  $5.2 < 16.919$ , Hence,  $H_{07}$  is accepted.

### Fixed Assets Ratio

The Fixed Assets ratio of the Enterprise varied between 0.19 during 2007 and 1.88 during 2015. It is found in the significance test that Fixed Assets ratio is uniform during the period of study. Fixed Assets ratio is less than one during first eight years of the study indicating that part long term funds are also available for financing working capital requirements. This is good for the enterprise. But, during last two years long term funds are not sufficient to meet fixed assets.

**TABLE-9: FIXED ASSETS RATIO (FIGURES IN LAKHS)**

| Years                 | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Fixed Assets          | 40.7  | 100.6 | 136.1 | 231.3 | 246.9 | 237   | 356.6 | 446.6 | 464.6 | 417.7 |
| Total Long Term funds | 210.6 | 320.9 | 356.8 | 371.5 | 411.7 | 532.4 | 473.7 | 497.6 | 247.2 | 325.6 |
| Fixed Assets Ratio    | 0.19  | 0.31  | 0.38  | 0.62  | 0.60  | 0.45  | 0.75  | 0.90  | 1.88  | 1.28  |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016.

Calculated value of  $\chi^2$  for Fixed Assets ratio = 3.2. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919 Calculated value is less than Critical Value i.e.,  $3.2 < 16.919$ , Hence,  $H_{08}$  is accepted.

### Current Assets to Proprietary Funds Ratio

The Current Assets to Proprietary Funds ratio of the Enterprise varied between 0.76 during 2011 and 2.12 during 2016. It is found in the significance test that Current Assets to Proprietary Funds ratio is uniform during the period of study. Current assets to proprietary ratio is always less than one except during 2007, 2015 and 2016.

**TABLE-10: CURRENT ASSETS TO PROPRIETARY FUNDS RATIO (FIGURES IN LAKHS)**

| Years               | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Current Assets      | 259.8 | 257.4 | 318.5 | 320.0 | 313.1 | 494.5 | 374.5 | 384.5 | 325.4 | 378.6 |
| Share Holders funds | 210   | 294.7 | 335.1 | 366.5 | 410.9 | 521.7 | 427.3 | 443.5 | 246.1 | 178.6 |
| Ratio               | 1.24  | 0.87  | 0.95  | 0.87  | 0.76  | 0.95  | 0.88  | 0.87  | 1.32  | 2.12  |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016.

Calculated value of  $\chi^2$  for Current Assets to proprietary funds ratio = 1.4. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919 Calculated value is less than Critical Value i.e.,  $1.4 < 16.919$ , Hence,  $H_{09}$  is accepted.

### Interest Coverage Ratio

The Interest Coverage ratio of the Enterprise varied between -492.5 during 2015 and 499.0 during 2007. It is found in the significance test that Interest Coverage ratio is not uniform during the period of study. Interest coverage ratio is negative during 2013, 2015 and 2016. This is not good long term creditors. It is high during all other years, which is a good phenomenon for long term creditors.

**TABLE-11: INTEREST COVERAGE RATIO (FIGURES IN LAKHS)**

| Years                   | 2007  | 2008  | 2009 | 2010 | 2011  | 2012  | 2013 | 2014 | 2015 | 2016 |
|-------------------------|-------|-------|------|------|-------|-------|------|------|------|------|
| EBIT                    | 49.9  | 116.2 | 40.4 | 41.5 | 62.5  | 165.6 | -    | 17   | -197 | -    |
| Interest                | 0.1   | 3.2   | 2.7  | 1.7  | 0.6   | 0.4   | 0.9  | 0.8  | 0.4  | 2.2  |
| Interest Coverage Ratio | 499.0 | 36.3  | 15.0 | 24.4 | 104.2 | 414.0 | -    | 21.3 | -    | -    |

Source: Annual Reports of Radhika Vegetable Oils Private Limited from 2006-07 to 2015-2016.

Calculated value of  $\chi^2$  for Interest coverage ratio = 13931.1. The Critical value of  $\chi^2$  at 9 degrees of freedom at 5% level of Significance is 16.919 Calculated value is less than Critical Value i.e.,  $13931.1 > 16.919$ , Hence,  $H_{10}$  is Rejected.

### CONCLUSION

Operating leverage is favorable for five years, financial leverage is favorable for three years and combined leverage is favorable for five years during the period of study. Degree of Operating Leverage, Degree of Financial Leverage and Degree of Combined Leverage are not uniform during the period of the study. All capital structure ratios except Debt-equity ratio and Interest coverage ratio are uniform during the period of study. Debt- Equity ratio is less than one during



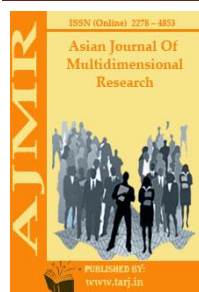
first eight years of the study ensuring high margin of safety for lenders and it is higher during 2015 and 2016 which reduced margin of safety for lenders. Low proprietary ratio and high solvency ratio during last two years of the study affected long term solvency position of the firm. Fixed assets to Net-Worth ratio is greater than one during last three years of the study. It means that owner's funds are not sufficient to finance the fixed assets and enterprise has to depend upon outside funds for this purpose, which is not good for the enterprise. Interest coverage ratio is negative during 2013, 2015 and 2016. This is not good long term creditors. To conclude, capital structure is well managed in the enterprise for first seven years. Capital structure was not efficiently managed during last three years.

## REFERENCES

1. Chua, J. H. and Woodward, R. S., The Pecking Order Hypothesis and Capital Structures of Private Companies, *Financial Management*, Vol.22, Issue.1, 1993, p.18.
2. Shyam-Sunder, L. and Myers, S. C., "Testing static trade-off against pecking order models of capital structure", *Journal of Financial Economics*, Vol.51, Issue.2, 1999, pp.219-244.
3. Kaur, R. and Rao, N. K., "Determinants of Capital Structure: Experience of Indian Cotton Textile Industry", *Vilakshan: The XIMB Journal Of Management*, Vol.6, Issue.2, 2009, pp. 97-112.
4. Bhayani, S. J., "Impact of financial leverage on cost of capital and valuation of firm: A study of Indian cement industry", *Paradigm*, Vol.13, Issue.2, 2009, pp.43-49.
5. Vijayakumar, A., An Empirical Investigation of the Trade-Off and Pecking Order Hypotheses on Indian Automobile Firms, *International journal of research in commerce, economics & management*, Vol.1, Issue.5, 2011, pp.94-100.
6. Ramaratnam, M. S., and Jayaraman, R., "Determinants of capital structure with special reference to Indian pharmaceutical sector: Panel data analysis", *Journal of Commerce and Accounting Research*, Vol.2, Issue.4, 2013, pp.45-50.
7. Thomas, A. E., Capital Structure and Financial Performance of Indian Cement Industry, *BVIMR Management Edge*, Issue.6, Vol.2, 2013, pp.44-50.
8. Srivastava, N., "Determinants of leverage of Indian companies: An empirical analysis (A study of cement industry in India)", *The International Journal of Business & Management*, Vol.2, Issue.3, 2014, pp.49-53.
9. Lyubomira Koeva-Dimitrova, "Capital Structure analysis of the Medical Diagnostic-Consultative centres in Varna (Absolute indicators)", *Journal of IMAB-Annual Proceeding (Scientific papers)*, Vol. 22, Issue.3, 2016, pp.1261-1264.
10. Radojko Lukić, Nenad Lalić, Srdjan Lalić, Nataša Tešić and Dragan Milovanović, "The Analysis of Capital Structure in the Trading Companies", *International Journal of Economics and Statistics*, Vol.4, 2016, pp.39-49.
11. Dr. Venkateswararao.Podile, "MSME Policy of Andhra Pradesh – A fillip to MSME sector", *International Journal of Business and Administration Review*, Vol.3, Issue.18, 2017, pp.67-69.
12. Dr. Venkateswararao.Podile, Surya Chandrarao.D and HemaVenkata Siva Sree.Ch, "Working capital Management in P.L.Plust Pvt Ltd", *IOSR Journal of Business Management*, Vol.19, Issue No.4, 2017, pp.61-65.

13. Dr. Venkateswararao.Podile, Surya Chandrarao.D and HemaVenkata Siva Sree.Ch, “Vigorous attempts to boost and buoying up MSMEs in India”, *IOSR Journal of Business Management*, Vol.19, Issue No.5, 2017, pp.24-28.
14. Chandrika Prasad Das and Rabindra Kumar Swain, “Influence of Capital Structure on Financial Performance”, *Parikalpana - KIIT Journal of Management*, Vol. 14, Issue.1, 2018, pp.161-170.
15. Venkateswararao.P, and HemaVenkata Siva Sree.Ch, “Working capital Management in Sri Rama Chandra Paper Boards Ltd”, *International Journal of Research in Management, Economics and Commerce*, Vol.8, Issue.2,2018, pp.54-59.
16. Dr. Venkateswararao.Podile, “Working capital Management in Tulasi seeds Pvt.Ltd- A case study in Andhra Pradesh”, *International Journal of Research in Management, Economics and Commerce*, Vol.8, Issue.2,2018, pp.262-266.
17. Dr. Venkateswararao.Podile, and Hema Venkata Siva Sree.Ch, “Working capital Management in Sri Nagavalli solvent oils Pvt. Ltd”, *IOSR Journal of Business Management*, Vol.20, Issue.2,2018, pp.79-84.
18. Dr. Venkateswararao.Podile, and Hema Venkata Siva Sree.Ch, “Working capital Management in Naga Hanuman Solvent Oils Private Limited- A case study of Andhra Pradesh”, *International Journal of Research in Management, Economics and Commerce*, Vol.8, Issue.3,2018, pp.114-119.
19. Dr. Venkateswararao.Podile, “Working capital Management in Cuddapah Spinning Mills Ltd- A case study in Andhra Pradesh”, *International Journal of Research in Engineering, IT and Social Sciences*, Vol.8, Issue.3,2018, pp.1-5.
20. Dr. Venkateswararao.Podile, and Hema Venkata Siva Sree.Ch, “Working capital Management in Kristna Engineering Works - A case study in Andhra Pradesh”, *International Journal of Research in Engineering, IT and Social Sciences*, Vol.8, Issue.3,2018, pp.61-66.
21. Dr. Venkateswararao.Podile, and Hema Venkata Siva Sree.Ch, “Working capital Management in small enterprise- A case study in Radhika Vegetables Oils Pvt. Ltd”, *IOSR Journal of Business Management*, Vol.20, Issue.3,2018, pp.69-74.
22. Dr. Venkateswararao.Podile, and Hema Venkata Siva Sree.Ch, “Working capital Management in Power Plant Engineering Works- A case study of Andhra Pradesh”, *International Journal of Exclusive Management Research*, Vol.8, Issue.4,2018, pp.1-7.
23. Dr. Venkateswararao.Podile, Hema Venkata Siva Sree.Ch, and N.Janardhanarao “Working capital Management in a Micro Enterprise- A case study of Nagas Elastomer Works”, *International Journal of Scientific Research and Review*, Vol.7, Issue.7,2018, pp.275-282.
24. Dr. Venkateswararao.Podile, Dr. Hema Venkata Siva Sree.Ch, and Gaddam. Sravan Kumar, “Working capital Management in M.G.Metallic Springs Pvt. Ltd. - A case study in Andhra Pradesh”, *International Journal of Research in Engineering, IT and Social Sciences*, Vol.8, Issue.7, 2018, pp.108-113.
25. Dr. Venkateswararao.Podile, Dr. K. Sudha Rani and Dr. Hema Venkata Siva Sree.Ch “Working capital Management in a Micro Enterprise - A case study of Sri Srinivasa Spun Pipes Company”, *Asian Journal of Multidimensional Research*, Vol.7, Issue.7, 2018, pp.185-194.
26. Dr. Venkateswararao.Podile, Dr. Hema Venkata Siva Sree.Ch and Gaddam. Sravan Kumar , “Working capital Management in a Small Enterprise- A case study of Raghunath Dye Chem Pvt. Ltd. ”, *International Journal of Management, IT & Engineering*, Vol.8, Issue.8, 2018, pp.331-337.

27. Dr. Venkateswararao.Podile, Dr. K. Sudha Rani and Dr. Hema Venkata Siva Sree.Ch  
“Working capital Management in Maitreya Electricals Pvt. Ltd.- A case study of Andhra Pradesh”, *ZENITH International Journal of Multidisciplinary Research*, Vol.8, Issue.8,2018, pp.296-304.
28. Dr. Venkateswararao.Podile, Dr. K. Sudha Rani and Dr. Hema Venkata Siva Sree.Ch  
“Working capital Management in a Micro Enterprise - A case study of Laxmi Vinay Poly Print Packs Pvt. Ltd.”,*International Journal of Research in Engineering, IT and Social Sciences*, Vol.8, Issue.8, 2018, pp.1 -6.
29. Dr. Venkateswararao.Podile and Dr. Hema Venkata Siva Sree.Ch, “Capital Structure Analysis of a Small Enterprise - A Case Study of M. G. Metallic Springs Pvt. Ltd.”, *International Journal of Research in Engineering, IT and Social Sciences*, Vol.8, Issue.8, 2018, pp.149-154.
30. Dr. Venkateswararao.Podile, Fr. Kataru.Anil Kumar and Hema Venkata Siva Sree.Ch,  
“Capital Structure Analysis of a Small Enterprise - A Case Study of Naga Hanuman Solvent Oils Private Limited”, *International Journal of Scientific Research and Review*, Vol.7, Issue.8, 2018, pp.548-555.
31. Dr. Venkateswararao.Podile, Fr. Kataru Anil Kumar and Dr. Hema Venkata Siva Sree.Ch  
“Capital Structure Analysis of A Small Enterprise - A Case Study Of Raghunath Dye Chem Pvt. Ltd.”, *Asian Journal of Multidimensional Research*, Vol.7, Issue.8, 2018, pp.281-292.
32. Dr. Venkateswararao.Podile, Fr. Kataru.Anil Kumar and Dr. Hema Venkata Siva Sree.Ch,  
“Capital Structure Analysis of a Micro and Proprietary Enterprise - A Case Study of Nagas Elastomer Works ”, *International Journal of Research in Engineering, IT and Social Sciences*, Vol.8, Issue.8, 2018, pp.269-275.
33. Dr. Venkateswararao.Podile, Fr. Kataru.Anil Kumar and Dr. Hema Venkata Siva Sree.Ch,  
“Capital Structure Analysis of a Large Enterprise - A Case Study of Tulasi Seeds Pvt. Ltd. ”, *Journal of Emerging Technologies and Innovative Research*, Vol.5, Issue.8, 2018, pp.973-979.
34. Dr. Venkateswararao.Podile, Fr. Kataru.Anil Kumar and Hema Venkata Siva Sree.Ch,  
“Capital Structure Analysis of a Micro and Partnership Enterprise - A Case Study of Bharat Cashew Manufacturing Company”, *International Journal of Scientific Research and Review*, Vol.7, Issue.9, 2018, pp.26-33.



## REVIEW OF LITERATURE ON THE SCOPE OF SOLAR PHOTOVOLTAIC IN INDIA

Sara Kunnath\*; Chaya Bagrecha\*\*

\*Research Scholar,  
Jain University, Bengaluru, INDIA.  
Email id: Sarakunnath@gmail.com

\*\*Professor and HOD,  
Adharsh Institute of Management and Information Technology,  
Bengaluru, INDIA.  
Email id: chayagandhi@gmail.com

### ABSTRACT

*Energy security, economic growth and environment protection has become policy drivers for all countries around the world. Promoting renewable energy technology is the way to address these concerns. Solar photovoltaic is considered as the answer to bridge the gap between demand and supply of energy in India. This study presents the significance and status of research on renewable energy in the Indian and International context. The major focus is to understand the direction of energy research in grid connected solar photovoltaic in consumer behaviour context. There is considerable literature on consumers like residential, industrial, commercial and educational installations in the international context but it is observed that Indian market is yet to be well researched academically in the consumer segment. Hence a rich consumer based research is imperative in understanding the requirements, opportunities, challenges and sustainable benefits of solar photovoltaic. This paper reviewed forty articles in categories namely literature review, empirical studies and qualitative and quantitative studies to compile information gained in the past two decades.*

**KEYWORDS:** Solar Photovoltaic, Sustainability, Conventional Energy, Renewable Energy, Government Policy.

## INTRODUCTION

Energy is an integral part of the economy and is important for the economic and social development of the country. Energy security, economic growth and environment protection are of utmost importance for all countries around the world. There is an urgent need for transition from petroleum-based energy systems to one based on renewable resources to decrease dependence on depleting reserves of fossil fuels and to mitigate climate change. Promoting renewable energy technology is the way to address concerns about energy security and economic growth in the future. Hence there is a need to boost the efforts for further development and promotion and deployment of renewable energy sources. Specific action which include promotion, innovation and basic research in renewable energy technologies have become very important. India's quest for energy security and sustainable development rests a great deal on the ability of the nation to divert its resources towards more sustainable energy policy. Grid connected solar photovoltaic is deemed as the best known source to replace, coal the major party in the energy mix.

## ADOPTION PARAMETERS

Last decade saw many empirical studies in the field of consumption of energy. Many national and international studies focused on different variables of the renewable energy and solar photovoltaic.

The paper reviewed forty articles and is divided into two sections. Section A contains twenty five papers based on different parameters such as the National scope of renewable energy and Solar Photovoltaic, and Section B contains fifteen International papers, based on the International Solar Photovoltaic scenario. The first section focuses on the history of transition of power from the conventional source of energy, electricity consumption- demand and supply and economic growth, need for solar photovoltaic as a source of energy, role of the government, policy and incentives, cost dynamics of deployment, technical issues, economic feasibility and financial performance, employment generation, sustainable development and emerging theoretical approaches. International studies converged on educational and technological approaches, performance evaluation studies, territorial and land scape impact, labour accidents, risk and market deployment strategies, grid parity, consumer concerns, knowledge, belief and attitude towards renewable energy, negative and positive socio- economic effect, employment and human resource development strategies for the sector and social and environmental benefits and sustainability assessment.

## Section A-SOLAR PHOTOVOLTAIC IN THE NATIONAL CONTEXT

With a growing economy and a 1.24 billion population aspiring for a better quality of life, India's energy demand growth is inevitable. Conventional fuel considered as the cause of 85% of the CO<sub>2</sub> emissions in the world. Promoting renewable energy is the way to address the concerns of energy security and environmental pollution. Osmani (2014) narrated the history of transition from conventional energy to renewable energy from the two oil shocks of 1970, and subsequent setting up of institutions for research and technology development. The author narrates the implementation and shortfalls of five year plans in achieving the targets of renewable energy and states key challenges in the sector. The author suggests policy changes to mend the gap between energy consumption and supply. Generation based incentives is recommended in place of Accelerated Depreciation as the latter has not yielded expected results. Kapoor etal (2014) also



outlined the journey and history of solar energy in India since 1950 and highlights the potential issues, barriers and challenges. The study will help decision makers and shareholders to understand the current status for better planning and management in the field of solar energy. Sisodia & Singh (2015) presented the status of renewable energy research in Indian context and presented factors that play an important role in the adaptation of solar energy such as financing needs by various agencies, higher investment cost on solar energy generation, barriers, subsidy and perception. The authors have looked into various studies to substantiate the effects of solar energy.

India currently is the fifth largest producer of electricity globally but is still a power deficit country. The energy poverty in India was discussed by Binde & Monroy (2011). They discussed the policies and the state of renewable energy in the country. The researchers feel that the unrealistic government targets lays hurdles in meeting some of the developmental goals. The authors studied the barriers of adoption like lack of finance, legal framework, incentives for businesses and technical knowledge. Ghosh (2015) analyzed the demand and supply gap and shortage during peak hours and observed that the three factors that drive energy demand in India are access, security, and efficiency. The author also stated that Job creation is major motivation for the Central Government in pursuing renewable energy. In order to meet the energy needs of the poor and encourage rural entrepreneurship, the author suggested energy policies with a mix of grid connected and decentralized renewable energy sources as it will provide the estimated 100,000 solar jobs in business development, design and construction, commissioning and operation and maintenance.

Present national energy status is required to determine the target and requirement in the future, Sharma et al (2012) Stated that Renewable energy sources and technologies have the capacity to provide solutions to the perpetual energy problems faced by developing country like India. The authors also stated that solar energy would enable India to add new capacity and also to increase energy security, address environmental concerns, and drive a massive market for renewable energy. Yadav et al (2015) dealt with the availability, current status, promotion, policies and future potential of different forms of solar energy in India. The author focused on Jawaharlal Nehru national solar mission, state wise targets and targets achieved. Consumption of power over different time period was highlighted by Kappagantu (2015) the author discussed the space availability, experience of the consumers and the impact of government initiatives in effective deployment of solar energy.

With 300 to 330 sunny days in a year, India is well suited for solar energy deployment. Gupta & Anand (2013) justified that the location of India is apt for Solar energy generation and summarized various tools used by the government for faster implementation of the renewable energy such as government initiated policy measures such as feed in tariff (FiT), RPO, excise duty exception and soft loan and the investors are attracted through various incentives like RE Voucher/Stamp, Capital Subsidy, Interest Subsidy, Viability Gap Funding (VGF), and Green Energy Bonds. The authors Rama chandra et al (2011) assessed the resource potential from high resolution satellite derived in solution data. The analysis revealed that nearly 58% of the geographical areas are potential solar hotspots in the country with more than 5 kWh/m<sup>2</sup>/day of annual average Global in solutions. The authors reported the immense power generation and emission reduction potential.

India is aiming at an annual economic growth rate of around 8%. The growth of the economy and its global competitiveness hinges on the availability of reliable and quality power at comparable



rates. Singh & Sandeep (2008) categorically stated that the demand of power in India is enormous and is growing steadily and the critical infrastructure on which the socio economic development of the country depends on. Power at competitive rates to Indian industry is of top priority in order to make Indian industries globally competitive and to enable it to exploit the potential of employment generation and the authors have used Multiple linear regression analysis to evaluate cost effectiveness. Ramachandra et al (2017) have used fuel price and economic stability as important factors in the study of domestic consumption of energy. The authors based their study on socio-economic, demographic and geographic factors in the assessment of energy consumption and used aggregated Time Series data in the study. The study also concentrates on the growing energy demand of urban population and resulting Green House Gas emission.

A need for increased access to renewable energy resources like solar and wind, and to find ways to reduce the cost and increase reliability of the renewable energy was recommended by Kumar et al (2014) the authors suggested an improvement in the quality of power as required by the 21st century economy by reduced disruptions, improved efficiency and better asset utilization and further recommended to reduce emission and thereby lower carbon footprint. The authors also proposed an increased use of digital technology such as fully automated power delivery network to monitor and control power flows in order to save energy.

The potential of grid tied solar Photovoltaic in India was discussed by Meena et al (2014) the authors discussed the monitoring techniques and implementation methods for the achievement of deliverables. Government initiatives and financial benefits were projected. Further Alam (2017) also analysed the development, potential, and future prospects of solar energy in India. Key policies drivers and initiatives taken by Indian government to promote solar energy were highlighted. Techno economic analysis of a roof top solar system was discussed, the results of which would benefit decision makers and various stakeholders in estimation of projects in future was expected as the key outcome. Kathar (2017) estimated the Rooftop photovoltaic capacity for a given site based on contract demand or sanctioned load, utility distribution capacity and available shadow free area for an ideal installation. Implementation barriers were discussed. The annual saving in electricity bill and payback period were reported.

Stable government and its policy measures are critical instruments to enhance the installations of solar energy. Gupta & Roy (2002) focused on climate change concerns, which drives the energy policy and discussed the United Nations Framework Convention on Climate Change and focused on the energy demand and supply, technological progress, energy efficiency programmes, and structural changes required. Energy consumption pattern in India in residential, agricultural and industrial sectors were discussed by Purohit (2009). The author presented the policy measures adopted by the government, which include financial and fiscal incentives to the installers. The author also discussed the barriers of high initial cost. The study has made an attempt to estimate the CO<sub>2</sub> mitigation potential of solar home systems under clean development mechanism in India

India is getting more urbanized every year. Faiers et al (2006) focused on the domestic or residential application of roof top solar energy as it is well suited for urban environment and argued that it provided an opportunity for individuals to make a statement about their environmental beliefs and stated that the system was also affordable, technically reliable, economically viable, comparable to other technologies and will be able to reduce pollution. At a national level solar energy would mitigate carbon dioxide and contribute to Gross Domestic Product through additional jobs and income from manufacturing and engineering sectors.

Maradin et al (2017) also stated that renewable leads to the development of new technologies and creates many new opportunities for entrepreneurs. The authors also observed that renewable energy technologies creates multiplier effect in sparking the economy on the whole and all sectors connected to it. The paper further analyses both the positive and the negative economic effects of investing in these technologies and validates the benefit by energy-economy model.

Finance plays a key role and is an important ingredient for the adaptation of new innovations and technological implementation into the field. Liming. (2009) emphasized the importance of financial need for renewable energy generation in India. The author classified the financial system into different categories such as financing by international funding, government, commercial and non commercial bank financing, private sector financing, public stock market, subsidies, venture capital, support from Ministries like MNRE (Ministry of New and Renewable Energy), research centres such as IREDA (Indian Renewable Energy Development Agency Limited) and CWET (Centre for Wind Energy Technology) for financing the research, project development and project implementation. Battacharya (2013) also discussed funding needs and financial mechanisms for universal energy access and stated that international donors have provided selective and limited support and said that mobilizing finance for the projects and ensuring its appropriate delivery and use remains a major concern with weak governance, limited organizational capacity and unfavorable policy proving as a hindrance.

Relationship between energy consumption and economic growth has been the prime interest of economists and policy analysts. Ghosh (2002) examines the Granger causality between electricity consumption per capita and Gross Domestic Product (GDP) per capita for India using annual data from 1950–51 to 1996–97. This study finds the absence of long-run equilibrium relationship among the variables. Savacool & Lakshmi (2012) proposed a triangular model of acceptance of Renewable energy in India. The authors stated that to penetrate the market socio political, market and community acceptance play a pivotal role. Gulagi et al (2017) is of the opinion that 100 percent of the Renewable energy system could be a reality in SAARC region and it will be more competitive than nuclear and fossil carbon capture and storage (CCS) alternatives.

## **Section- B. RENEABLE ENERGY- INTERNATIONAL ASSESSMENT**

Favorable policy is considered as the driving factor that encourages solar energy deployment in the international context as well. Awerbuch (2000) states that the policy makers have the responsibility to broaden the analytic horizon to incorporate new valuation models and concepts that reflect the unique attributes and contribution of the photovoltaic and emphasized on the usefulness of Capital Asset Pricing Model (CAPM) to understand the true value of photovoltaic. Solar policy of different countries were analysed by Rodriques, et al (2016) the author summarised the local policies for small solar photovoltaic system in 13 countries and selected most profitable city based on radiation, subsidies and prices and calculated IRR, NPV and DPBP based on investment prices and maintenance cost. Crago & chernyakhovskiy (2017) examined the effectiveness of policy incentives to increase residential solar PV capacity. The study presented a significant and positive relationship between hybrid vehicle sale and residential PV capacity growth suggesting a progressive environmental preference as a predictor and predecessor for solar PV demand.

Energy and environmental impacts are discussed from the stand point of sustainable development and anticipated patterns of energy use in the future and subsequent environmental

issues. Dincer (1999) considers factors such as population growth, environmental impact, economic performance, consumer tastes and technological developments as significant factors that will drive energy consumption. Bang (2000) investigated the relationship between concern for environment, knowledge about renewable energy and beliefs about consequences of using renewable energy and consumer attitude towards paying a premium for renewable form of energy using the theory of reasoned action as theoretical frame work.

The environmental and social criteria are impacting the global market in complex ways. Sridhar & Jones (2013) observed that corporate world has embraced Triple bottom line and focused on a balance of economic, environmental and the social framework for a sustainable future. TBL reporting has been embraced as a way of thinking for corporate sustainability and the paper criticizes and states that there is limited information of the TBL approach. The causes of CO<sub>2</sub> emission between India and China was compared by Jayanthakumaran (2012). The author states that the CO<sub>2</sub> emissions in china are influenced by per capita income, structural changes and energy consumption and the same does not hold true for India, as India is an informal economy with exceptionally large number of micro – enterprises which are low energy users and are not large enough to reach international market.

Territorial and landscape impacts and environmental impact during the life cycle of the product was brought under scanner by Tsoutsos (2005) and Potential burden to environment was analyzed by the author. The author estimated that the environmental impact during the construction, installation and demolition phases of the renewable energy technologies including the visual intrusion, green house gas emission during manufacturing process, labour accidents, impact on archaeological sites and negative and positive socio-economic effect as main parameters for the study. He also suggested to usher in new technical innovations and good practices into the future power systems.

Educational and technical approaches which centered on potential and performance evaluation studies by Cholakkal (2006) revolved around the cost benefit analysis of building integrated photovoltaic system. The author has analyzed how different parameters namely solar radiation, temperature and solar altitude affect the power generated by new thin film photovoltaic panel. Multiple linear regressions is used to evaluate cost effectiveness. Strupeit et al (2017) identifies the long-term dynamics of “soft” and “hard” cost in deployment of building-sited PV systems in Germany since 1990s. The results are encouraging as the costs of components such as inverters and mounting systems have decreased by 70–87% and soft deployment costs such as planning and installation has decreased by 65–85%. Li & Liu (2018) presented a new methodology that combines a life cycle cost (LCC) approach and a pixel method. This helps in estimating economic performances of constructing PV projects. The 3D visualisation demonstrates the investment return for placing each solar panel on a specific site over roofs and facades. This study will influence and benefit designers and construction managers during phases of design and construction and installation.

Grid parity is often gauged as the turning point in adaptation of Solar photovoltaic. Yang (2010) emphasised the significance of Grid parity, which is reducing the cost of solar energy to compete the conventional grid energy, as the tipping point to move towards solar is overoptimistic in his view, as cost effectiveness may not guarantee commercial competitiveness and he pointed out that rapid growth in PV deployment is largely policy driven. In order to make the growth sustainable the government should provide financial incentives and policy changes and address regulatory and market barriers effectively. Kwan (2012) used social, technical,

environmental, economic and political(STEEP) variables to study the spatial distribution of residential solar photovoltaic. GIS was used to evaluate predicted and observed residential solar PV shares by ZIP code.

Economic feasibility of a project ensures fast paced incorporation of the technology. Sagner et al (2017) developed economic feasibility of residential and commercial PV technology in 314 districts and 13 regions in Chile, taking Chilean regulatory framework and the economic performance results into consideration. The result show that almost the entire country presents a great potential, obtaining in several locations an IRR higher than the reference value (5%)for both residential and commercial buildings. Fiscal and regulatory incentives were discussed by Timilsina et al (2012). The authors also summarized the tax credits and exemptions, feed-in-tariff, preferential interest rates, renewable portfolio standards and voluntary green power programs, expansion of carbon credit markets as additional incentives to solar energy deployment. They also studied the technical and financial barriers, which obstruct further deployment.

## CONCLUSION

Impending shortages of fossil fuel reserves along with the scarcity of energy compared to the demand, climate change and environmental concern and positive government policies are the main drivers favoring renewable energy especially solar PV penetration into the Indian markets. Since there is a large potential available for generating solar power using unutilized space on rooftops, the best suitable long term design for India would be highly distributed set of individual rooftop power generation systems connected through a local grid. However there is a gap in literature with regard to the comparison of cost and benefit to different consumers like industrial, institutional and commercial buildings. There is a huge gap of cost benefit assessment of different types of renewable energy alternatives. There are numerous articles on the socio economic and environmental benefits or sustainable benefit of renewable energy but greater developmental opportunities like job creation and entrepreneurial development in the Indian markets should be given more significance. Successful implementation of innovation lies in the societal acceptance of the new technology and hence there is a need to record public acceptance and impact on consumers and end users with solar photovoltaic installations.

## REFERENCES

1. Alam, M. (2017).Techno Economic Analysis of Rooftop Solar System Along with Potential and Future Prospects in India. *International Journal of Advanced Research*, 7(5). ISSN: 2277 128X
2. Awerbuch, S. (2000). Investing in photovoltaics: risk, accounting and the value of new technology. *Energy Policy*, 28(14), 1023–1035.
3. Bang, K., Alexander, E., & Patrick, A. (2000). Consumer Concern, Knowledge, Belief, and Attitude toward Renewable Energy: An Application of the Reasoned Action Theory. Assessed from [https://s3.amazonaws.com/academia.edu.documents/52768042/28sici\\_291520-6793\\_28200006\\_2917\\_3A6\\_3C449\\_3A\\_3Aaid-mar2\\_3E3.0.co\\_3B2-820170422-10604a4x4ac.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=15279551](https://s3.amazonaws.com/academia.edu.documents/52768042/28sici_291520-6793_28200006_2917_3A6_3C449_3A_3Aaid-mar2_3E3.0.co_3B2-820170422-10604a4x4ac.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=15279551)
4. Bhattacharyya, S.C. (2013). Financing energy access and off-grid electrification: a review of status, options and challenges. *Renewable and Sustainable Energy Reviews*, 20, 462-472.

5. Bhide, A., &Minroy, C.R.(2011). Energy poverty: A special focus on energy poverty in India and renewable energy technologies. *Renewable Energy and Sustainable Energy Reviews*, 15(2), 1057-1066.
6. Cholakkal, L., (2006). Cost-benefit analysis of a Building Integrated Photovoltaic Roofing system for a school located in Blacksburg, Virginia. Assessed from [http://scholar.lib.vt.edu/theses/available/etd-05192006151805/unrestricted/01\\_title\\_abstract.pdf](http://scholar.lib.vt.edu/theses/available/etd-05192006151805/unrestricted/01_title_abstract.pdf)
7. Crago,C.L., &Chernyakhovskiy.L(2017) Are policy incentives for solar power effective? Evidence from residential installations in the Northeast. *Journal of Environmental Economics and Management*, 81,132-151.
8. Dincer, I.(1999 ). Environmental impacts of energy,” *Energy Policy*, 27(14), 845–854.
9. Faiers, A., &Neame, C.(2006). Consumer attitudes towards domestic solar power systems. *Energy policy*, 34, (14), 1797-1806.
10. Ghosh, A. (2015). The big push for renewable energy in India: What will drive it? *Bulletin of the Atomic Scientists*, 71(4), 31–42.
11. Ghosh,S. (2002).Electricity consumption and economic growth in India. *Energy Policy*, 30 125–129 assessed from: [https://www.researchgate.net/publication/222598438 Electricity consumption and economic growth in India](https://www.researchgate.net/publication/222598438_Electricity_consumption_and_economic_growth_in_India) [accessed May 28 2018].
12. Gulagi, A., Choudhary, P., Bogdanov, D.,&Breyer, C. (2017). Electricity system based on 100% renewable energy for India and SAARC. *PLoS ONE* 12(7): e0180611. <https://doi.org/10.1371/journal.pone.0180611>
13. Gupta, S. K., &Anand, R.S. (2013). Development of Solar Electricity Supply System in India: An Overview *Journal of Solar Energy*, [https://www.google.co.in/search?q=13.+Gupta%2C+S.+K.%2C%26+Anand%2C+R.S.+\(2013\).+Development+of+Solar+Electricity+Supply+System+in+India%3A+An+Overview+Journal+of+Solar+Energy%2C&oq=13.+Gupta%2C+S.+K.%2C%26+Anand%2C+R.S.+\(2013\).+Development+of+Solar+Electricity+Supply+System+in+India%3A+An+Overview+Journal+of+Solar+Energy%2C&aqs=chrome..69i57.4279j0j4&sourceid=chrome&ie=UTF-8](https://www.google.co.in/search?q=13.+Gupta%2C+S.+K.%2C%26+Anand%2C+R.S.+(2013).+Development+of+Solar+Electricity+Supply+System+in+India%3A+An+Overview+Journal+of+Solar+Energy%2C&oq=13.+Gupta%2C+S.+K.%2C%26+Anand%2C+R.S.+(2013).+Development+of+Solar+Electricity+Supply+System+in+India%3A+An+Overview+Journal+of+Solar+Energy%2C&aqs=chrome..69i57.4279j0j4&sourceid=chrome&ie=UTF-8)
14. Gupta. M.D& Roy. J(2002). *Energy Consumption in India: an indicator analysis.* Development Alternatives. p12-13 .Assessed from [http://www.devalt.org/newsletter/oct02/of\\_6.htm](http://www.devalt.org/newsletter/oct02/of_6.htm)
15. Jayanthakumaran, K.,Verma, R., & Liu, Y. (2012). *CO2 emissions, energy consumption, trade and income: A comparative analysis of China and India.* *Energy Policy*, Elsevier, vol. 42(C), 450-460.
16. Kapoor, K., Pandey, K.K., Jain, A.K., &Nandan, A.(2014).Evolution of solar energy in India: A review. *Renewable and Sustainable Energy Reviews*, 40,475–487.
17. Kappagantu,R., Daniel, A., &Venkatesh, M. (2015).Analysis of Rooftop Solar PV System Implementation Barrier in Puducherry Smart Grid Pilot Project. *Science Direct. Procedia Technology*, 21, 490 – 497.
18. Kathar.S.S., Thosar. A.G.,&Patil.G.C. (2017). Design of Rooftop Solar PV. *International Journal of Electrical Engineering & Technology*, 8( 2), 81–92.
19. Kumar, S., Bhattacharyya, B., &Gupta,V. K. (2014). Present and Future Energy Scenario in India. *Research gate* , Assessed from

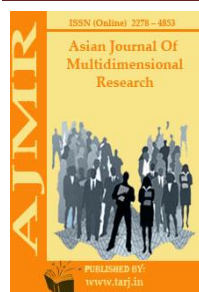


[https://www.researchgate.net/publication/269367727\\_Present\\_and\\_Future\\_Energy\\_Scenario\\_in\\_India](https://www.researchgate.net/publication/269367727_Present_and_Future_Energy_Scenario_in_India)

20. Kwan, C. L. (2012). Influence of local environmental, social, economic and political variables on the spatial distribution of residential solar PV arrays across the United States. *Energy Policy*, 47, 332-344.
21. Liming .H.(2009). Financing rural renewable energy: A comparison between China and India. *Renewable and Sustainable Energy Reviews*, 13(5), 1096-1103.
22. Meena, R.S., Rathor, J.S., &Johri.S. (2014). Grid Connected Roof Top Solar Power Generation: A Review. *International Journal of Engineering Development and Research*, 3(1) ISSN: 2321-9939.
23. Osmani, A.R. (2014). Conventional Energy to Renewable Energy: Perspectives for India. *The NEHU Journal*, 12( 2), 41-60.
24. Purohit .P., (2009). CO2 emission mitigation potential of solar home systems under clean development mechanism in India. *Energy*, Elsevier, 34(8)1014-1023.
25. Ramachandra, T.V., Jain .R.,&Krishnadas .G.(2011). Hotspots of solar potential in India. *Renewable and Sustainable Energy Review*, 15 (6)3178-3186.
26. Ramachandra,T.V., Bajpai. V., Kulkarni. G., Aithal.B.H.,&Han.S.S (2017) Economic disparity and CO<sub>2</sub> emissions: The domestic energy sector in Greater Bangalore, India. *Renewable and Sustainable Energy Reviews*, 67, 1331–1344.
27. Rodriguez, S., Torabikalak,R.,Faria,F., Cafôfo, N., Chen, X., Ivaki, A.R., Lima, H.M.,&Dias, F.M. (2016).Economic feasibility analysis of small scale PV systems in different countries. *Solar Energy*, 131, 81-95.
28. Sagner,G.R.,Torres, C.A., Pino,A.,&Escobar,R.A.(2017).Economic feasibility of residential and commercial PV technology: The Chilean case.*Renewable Energy*, (111),332-343.
29. Sharma, N.V., Tiwari,P.K., &Sood, Y.R. (2012)Solar energy in India: Strategies, policies, perspectives and future potential. *Renewable and Sustainable Energy Reviews*, 16, 933–941.
30. Singh, j.&Sandeep,K.(2008)Scope of Solar Energy in India, *Environment Development Challenges and Opportunities*. Edited by Jagbirsingh, I.K.International Pvt. Ltd., New Delhi-16. [http://shodhganga.inflibnet.ac.in/bitstream/10603/4273/7/07\\_chapter%201.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/4273/7/07_chapter%201.pdf)
31. Sisodia, G.S; Singh,P.(2015).The status of renewable energy research on India. *ScienceDirect,Energy Procedia*, 95, 416 – 423.
32. Tsoutsos, T. (2005).Environmental impacts from the solar energy technologies. *Energy Policy*,33(3), 289–296.
33. Savacool, B.K.,&Lakshmi,B.K(2012). Conceptualizing the acceptance of wind and solar energy. *Renewable and Sustainable Energy Reviews*. 16(7) 5268-5279.
34. Yadav, H. K., Kumar, V.,&Yadav,V. (2015). Potential of Solar Energy in India: A Review. *International Advanced Research Journal in Science, Engineering and Technology* 2( 1).
35. Yang, C.J.(2010). Reconsidering solar grid parity. *Energy Policy*, 38, (7) 3270–3273.
36. Li,Y., &Liu,C.(2018) Techno-economic analysis for constructing solar photovoltaic projects on building envelopes. *Building and Environment*. Vol 127, 37-46
37. . Maradin, D., Cerović, L., &Mjeda, T. (2017). Economic Effects of Renewable Energy Technologies. *Našegospodarstvo/Our Economy*, 63(2), 49–59. DOI: 10.1515/ngoe-2017-0012



38. Strupeit, L., Neij, L., 2017. Cost dynamics in the deployment of photovoltaic's: Insights from the German market for building-sited systems. *Renewable and Sustainable Energy Reviews*, 69, 948–960. doi:10.1016/j.rser.2016.11.095
39. Timilsina, G.R., Kurdgelashvili, L. & Narbel, P.A. 2012. Solar energy: Markets, economics and policies. *Renewable and sustainable energy reviews*. 16(1): 449-465.
40. Sridhar, K., & Jones, G (2013). The three fundamental criticisms of the Triple Bottom Line approach: An empirical study to link sustainability reports in companies based in the Asia-Pacific region and TBL short comings. *Asian J Bus Ethics* 2:91–111



## LIQUID INOCULANTS OF PLANT GROWTH PROMOTING BACTERIA (PGPR) ON SEED VIGOUR AND GROWTH OF RICE SEEDLINGS (CO -43)

**G. Manimekalai \*; M. Kannahi\*\***

\*Assistant Professor,  
Sengamala Thayaar Educational,  
Trust Womens College Mannargudi,  
Tamil Nadu, INDIA.  
Email id: manistet@gmail.com

\*\*Assistant Professor,  
Sengamala Thayaar Educational,  
Trust Womens College Mannargudi,  
Tamil Nadu, INDIA.  
Email id: kannahiamf@gmail.com

### ABSTRACT

*Single and combined inoculation of liquid PGPR inoculants on rice seed germination and growth of seedlings under green house trial were investigated. The selected liquid inoculants namely Azospirillum sp, Azotobacter sp and Pseudomonas sp were tested on rice variety CO – 43. The liquid formulations developed with matka khaad liquid manure and protective substances (Trehalos 1%) base, for individual bacteria and mixed cultures were used. These formulations were used for seed treatment, seedling treatment and soil application, in rice under in vitro germination conditions. Higher percentage of seed germination was recorded in T5 treatment (Azospirillum sp + Pseudomonas + Bacillus sp - 89.25) followed by (T4 –Azotobacter sp +Pseudomonas + Bacillus sp - 88.50) than the single inoculation. In all the treatments seed vigour index was higher (T5 - 7348 ± 97.2) than control. The other growth parameters such as plant height, number of tillers, chlorophyll content and number of leaves were enhanced by the combination of both of the bacteria when compared to individual formulations. The results revealed that the multifactorial mixed inoculants can be used as better alternative to reduce the use of chemical fertilizer in rice cultivation for sustainable agriculture and soil conservation.*

**KEYWORDS:** Azospirillum Sp, Azotobacter Sp, Seed Germination, Rice.

## INTRODUCTION

Contemporary soil management approach is mainly dependent on chemical-based fertilizers, which caused a hazardous effect to human health and soil fertility. The exploitation of agriculturally important microbes as biofertilizer has become greatest significance in agriculture sector for their beneficial role in food safety and supporting long term ecological balance. The green revolution practices incite as in broad spectrum of application of plant growth promoting rhizobacteria (PGPRs), and many other useful soil microflora help to better nutrient uptake, enhance plant growth and tolerate to various environmental stress (Bhardwaj *et al.*, 2014).

Plant Growth Promoting Rhizobacteria (PGPR) is a group of beneficial bacteria that interact with plant roots, promote the plant growth and improve the soil nutrient availability by variety of mechanisms (Wu *et al.* 2004). They acted as rhizoremediators by degrading organic pollutants and enrich the soil fertility (Somers *et al.*, 2004), and also act as biopesticides by production of siderophores, the synthesis of antibiotics, enzymes and/or fungicidal compounds (Ahmed *et al.* 2004; Bharathi *et al.*, 2006; Jeun *et al.*, 2004). Interactions of these PGPR determine soil health in natural agroecosystem by providing numerous services to soil viz., organic matter decomposition, nutrient acquisition, water absorption, nutrient recycling and weed control.

PGPR significantly influence the growth and yield of various agronomical important crop have been reported. (Asghar *et al.*, 2002; Bashan *et al.*, 2004 and Biswas *et al.*, 2000). *Azospirillum*, *Pseudomonas* and *Azotobacter* strains could enhance seed germination and seedling growth (Shaukat *et al.*, 2006). Kloepper *et al.* (1992) have been reported that wheat yield increased up to 30% with *Azotobacter* inoculation and up to 43% with *Bacillus* inoculation. Strains of *Pseudomonas putida* and *Pseudomonas fluorescens* could increase root and shoot elongation in canola (Glick *et al.*, 1997).

Bioinoculants can increase the nutrient uptake of plants by fixing atmospheric nitrogen, solublize phosphorous with the production of organic acids and promote the plant growth by secreting growth hormone, speed up seed germination, seed emergence and increase the volume of root.

The application of bio-fertilizers that contain living microorganisms is one of the mainframe practices that can help to maintain or increase the content of organic matter and improve soil fertility in cultivable soils. Despite the fact that bio inoculants have been known for many years, relatively little research has been done to document their effects (or noneffects) on crop production or to provide evidence of their potential effects on soil properties and processes, especially in outstanding peer reviewed scientific journals (Dinesh *et al.*, 2010; Khaliq *et al.*, 2006; Mayer *et al.*, 2010; Piotrowska *et al.*, 2012; Wu *et al.*, 2005; Zhao *et al.* 2005).

Increase plant nutrient availability of P, K through chelation, exchange reaction and production of organic acids promote plant growth by producing hormone to increase plant growth, speed up seed germination, improve seedling growth without infection.

Microbial inoculants applied as seed treatments imparts microorganisms directly to the plant rhizosphere—the root surrounding soil zone where plants interact directly with microorganisms (Philippot *et al.*, 2013). It is a zone of potent microbial activity, with growth of plants and microorganisms dependent on corresponding supply of nutrients and a wide range of other compounds including plant growth hormones and antagonistic substances. Many beneficial microorganisms of agricultural importance are rhizosphere colonising species, with ability to increase plant growth via a range of mechanisms (Babalola, 2010)

There is evidence that co-inoculation with multiple microorganisms can improve plant yield compared to the use of a single inoculant. Use of PGPR with microbial pest control agents is considered to be an innovative approach in soil health management and for the improvement crop yield and quality (Janisiewicz, 1996; Marimuthu *et al.*, 2002). Co-inoculation may also broaden the environmental range over which the seed treatment is effective, for example by supplying strains active at a range of different soil temperatures. Single and dual inoculations of field-grown wheat with two isolates of P-solubilising microorganisms (*Pseudomonas sp.* and *Aspergillus awamori*) resulted in significant gains in yield and P uptake (Babana and Antoun 2006). Hence the present article deals with the assessment of efficacy of co inoculation liquid inoculants of PGPR on seed germination and seedlings growth on rice plants.

## MATERIALS AND METHODS

### PREPARATION OF LIQUID INOCULANTS

The plant growth promoting rhizobacteria were isolated from rice rhizosphere and their growth promoting abilities were determined. The selected PGPR namely *Azotobacter sp.*, *Azospirillum sp.*, *pseudomonas* and *Bacillus sp* were formulated with liquid manure matkhaa khaad and protective substances trehalose (1%) and stored at 25°C to maintained their viability. (Data Published)

### PREPERATION OF RICE SEEDS

Rice seeds of the variety C0 - 43 were purchased from local market Mannargudi. Rice seeds were subjected to surface sterilized with 90 % ethanol, followed by 5 % sodium hypochlorite and washed with sterile distilled water

### RICE SEED GERMINATION TEST

100 rice seeds were selected for each treatment. Each set of rice seeds were tightly covered by cotton cloth and dipped in clean glass vessels filled with distilled water and 1 ml of liquid PGPR inoculants namely *Azotobacter sp.*, *Azospirillum sp*, *Pseudomonas* and *Bacillus sp* with sufficient population density of  $10^6$  to  $10^7$  cfu/ml and shaken overnight in 150 rpm. Seeds were dipped in sterile distilled water considered as control. For each liquid inoculant, 100 seeds in 3 replications were allocated and in each replication, 100 seeds were put on sterile filter paper in Petri dishes. They were irrigated with sterile distilled water during the incubation period and temperature was maintained at 25° C.

Germination rate or seedling emergence was calculated using the following formula proposed by International Rice Research Institute (2011) on last day of experiment:

Percentage of seed germination was calculated by

$$\frac{\text{No of seeds germinated}}{\text{No of seeds on the tray}} \times 100$$

Vigor index of seedlings were measured on last day of experiment (day 7) according to the formula proposed by Abu-Bakr and Anderson (1973):

Seed vigour index = % of seed germination X seedling length

Seedling trays were sterilized with 70 % ethanol and washed thoroughly with sterile distilled water. They were filled with autoclaved soil and surface sterilized rice seed (Variety Co - 43)

were sown for nursery raising. Seedling trays were irrigated with sterile distilled water until the stage of unfolded 3 leaves. Height and root length of the seedlings was measured. For weight measurements seedlings were uprooted and dry weight was taken after the seedlings kept at hot air oven at 40 c for 72 hours. Weight measurements was made by digital magnetic balance and noted in gram.

### **EFFICACY ASSESSMENT OF LIQUID PGPR INOCULANTS IN GREEN HOUSE TRIAL**

Liquid inoculants of PGPR were tested for their efficacy to promote the growth parameters of rice cultivar CO -43 in green house condition. This experiment contains five treatment includes

T1 – Control

T2 – *Azotobacter sp*

T3 – *Azospirillum sp*

T4 – *Azotobacter sp*+ *Pseudomonas sp*+ *Bacillus sp*

T5 – *Azospirillum sp* + *Pseudomonas sp*+ *Bacillus sp*

Each treatment was replicated 4 (four) times, thus there were 20 experimental units in this experiment. Each experimental unit consisting of 10 plastic pots of 30 cm diameter. Soil was taken from rice field at 20 cm depth mixed with vermicompost (3:1 w/w). Application of liquid inoculants was done through seedlings treatment, where the seedlings were soaked in liquid suspension ( $10^9$ (CFU/ml) for 2 h before transplanting to pot. Treatment with rhizobacteria was also done at the time of transplanting by incorporating 10 ml of each liquid inoculant ( $10^7$ CFU/ml) per pot in the respective treatments. Several plant parameters were observed during this experiment, such as plant height, number of tillers and content of chlorophyll to determined their efficacy.

### **ESTIMATION OF CHLOROPHYLL (ARNON, 1949):**

The chlorophyll content of the leaf was determined by the method of Arnon (1949). 1 gram of leaf sample was taken and cut in to small pieces, homogenized in a pre-cooled mortar and pestle using 80% (V/V) acetone. A pinch of calcium carbonate was added while grinding. The extracts were centrifuged at 3000 rpm for 15 min and made up to 25 ml with 80% (V/V) acetone. The clear solution was transferred to a special glass tube and the optical density was measured at 645 nm and 663 nm, against an 80% acetone blank in UV visible spectrophotometer (UV 240). The levels of chlorophyll 'a' and chlorophyll 'b' were estimated by using the equation given below:

Chlorophyll 'a' ( $\mu$ /g/ml) = (12.7 x O.D. at 663 nm) – (2.69 x O.D. at 645 nm)

Chlorophyll 'b' ( $\mu$ /g/ml) = (22.9 x O.D. at 645 nm) - (4.08 x O.D. at 663 nm)

Total chlorophyll ( $\mu$ /g/ml) = (20.2 x O.D. at 645 nm) + (8.02 x O.D. at 663 nm)

The chlorophyll content was expressed as mg chlorophyll per gram fresh weight of the leaf.

### **STATISTICAL ANALYSIS:**

Collected Data were subjected to analysis of variance (ANOVA) in SPSS 16.0 followed by Duncan's multiple range test at 5 % level (Duncan, 1955).

**TABLE 1: EFFECT OF FORMULATED LIQUID INOCULANTS OF PGPR ON GROWTH ENHANCEMENT IN RICE PLANT (CO - 43) AT 15 DAYS (DAS)**

| Treatments   | Seed germination (%)       | Seed vigour Index        | Root Length            | Fresh weight (g/seedling) | Dry weight (g/seedling) |
|--|----------------------------|--------------------------|------------------------|---------------------------|-------------------------|
| <b>T1 – Control</b>  | 87.00 ± 0.40 <sup>a</sup>  | 43262±3.51 <sup>a</sup>  | 6.77±0.09 <sup>a</sup> | 5.65±0.15 <sup>a</sup>    | 1.85±0.023 <sup>a</sup> |
| <b>T2 – <i>Azotobacter sp</i></b>  | 87.75± 0.47 <sup>ab</sup>  | 57330±1.54 <sup>b</sup>  | 6.78±0.12 <sup>a</sup> | 5.61±0.12 <sup>a</sup>    | 1.82±0.08 <sup>a</sup>  |
| <b>T3 – <i>Azospirillum sp</i></b>   | 88.25 ± 0.62 <sup>ab</sup> | 66872±1.16 <sup>c</sup>  | 7.48±0.29 <sub>b</sub> | 6.69±0.09 <sup>b</sup>    | 2.27±0.19 <sup>ab</sup> |
| <b>T4 – <i>Azotobacter sp</i> + <i>Pseudomonas</i> + <i>Bacillus sp</i></b>  | 88.50 ± 0.64 <sup>ab</sup> | 72265±1.37 <sup>cd</sup> | 7.58±0.12 <sub>b</sub> | 7.22±0.13 <sup>c</sup>    | 2.89±0.36 <sup>b</sup>  |
| <b>T5 – <i>Azospirillum sp</i> + <i>Pseudomonas</i> + <i>Bacillus sp</i></b> | 89.25± 0.47 <sup>b</sup>   | 7348±97.2 <sup>d</sup>   | 7.45±0.09 <sub>b</sub> | 6.87±0.17 <sup>bc</sup>   | 2.86±0.36 <sup>b</sup>  |

Values are represented as Mean±S.E

Value in the same column same letters are not significantly different ( P ≥ 0.05) according to Duncan's Multiple Range test at 5% level

**TABLE 2: EFFECT OF FORMULATED LIQUID INOCULANTS OF PGPR ON GROWTH ENHANCEMENT IN RICE PLANT (CO -43) AT 30 DAYS (DAT)**

| Treatments  | Plant height (cm/seedling) | No of leaves            | No of roots             | No of tillers                         | Total Chlorophyll (mg /g of FWL) |
|---|----------------------------|-------------------------|-------------------------|---------------------------------------|----------------------------------|
| <b>T1 – Control</b>   | 18.60 ± 0.22 <sup>a</sup>  | 14±0.40 <sup>a</sup>    | 12±0.40 <sup>a</sup>    | 11.5±0.64 <sup>a</sup>                | 3.35±0.08 <sup>a</sup>           |
| <b>T2 – <i>Azotobacter sp</i></b>   | 19.59 ± 0.07 <sup>b</sup>  | 16.75±0.47 <sup>b</sup> | 12.70±0.10 <sup>b</sup> | 12.00±0.40 <sup>a</sup> <sub>b</sub>  | 3.46±0.07 <sup>a</sup>           |
| <b>T3 – <i>Azospirillum sp</i></b>  | 19.47± 0.08 <sup>b</sup>   | 17.25±0.85 <sup>b</sup> | 12.72±0.06 <sup>b</sup> | 12.75±0.47 <sup>a</sup> <sub>bc</sub> | 3.93±0.20 <sup>b</sup>           |
| <b>T4 – <i>Azotobacter sp</i> + <i>Pseudomonas</i> + <i>Bacillus sp</i></b> | 19.83 ± 0.10 <sup>b</sup>  | 16.75±0.47 <sup>b</sup> | 12.85±0.11 <sup>b</sup> | 14.25±0.47 <sup>c</sup>               | 4.39±.0.14 <sup>c</sup>          |
| <b>T5–<i>Azospirillum sp</i> + <i>Pseudomonas</i> + <i>Bacillus sp</i></b>  | 19.41±0.18 <sup>b</sup>    | 15.5±0.64 <sup>a</sup>  | 12.82±0.10 <sup>b</sup> | 13.5±0.64 <sup>bc</sup>               | 4.49±0.20 <sup>c</sup>           |

Values are represented as Mean ± S.E

Value in the same column the same letters are not significantly different ( P ≥ 0.05) according to Duncan's Multiple Range test at 5% level



## RESULTS AND DISCUSSION

### RICE SEED GERMINATION

Seven days after seed treatment with liquid inoculants of PGPR and sterile distilled water as control the seed germination percentage and seed vigour index were calculated. Seed treatment with combined liquid bioinoculants resulted in increased seed germination, seed vigour index when compared to control and single inoculation. Higher percentage of seed germination (89.25) was recorded in T5 treatment (*Azospirillum sp* + *Pseudomonas* + *Bacillus sp*) followed by T4 – *Azotobacter sp* + *Pseudomonas* + *Bacillus sp* (88.50). In all the treatments seed germination and seed vigour index were higher (T5 - 7348±97.2) than control. After 15 days of seed treatment root length and the fresh and dry weight of the seedlings were calculated.

The present study revealed that valuable effects of the PGPR on rice. This improvement of the germination percentage observed in our study, could be due to the production of vitamins and growth substances which enhance the seed germination (Neeru Narula, 2000). Production of IAA and other auxins i.e gibberellins, cytokinins (Martinez – Toledo *et al.*, 1988) which help in enhancing the root growth and help the plant in better nutrient adsorption.

All treatments with PGPR in the study showed increased vigor index of rice seeds 7 days after germination (Table 1). The seeds inoculated with the combination of *Azotobacter sp* and *Pseudomonas* showed the highest vigor index, which was higher than the control.

The one way ANOVA at 15 days showed that biomass of plants treated with single and combined PGPR liquid inoculants resulted significantly higher in comparison to uninoculated control.

### EFFICACY ASSESSMENT ON POT CULTURE

The effect of PGPR inoculants above the ground at 30 days in the pot culture under green house conditions, on the growth parameters is presented in table -2. The highest root length also recorded in single and combined inoculation of *Azospirillum sp* (7.48, 7.58 and 7.45). The highest value of fresh and dry weight of the seedlings was recorded in combined inoculation of PGPR treated seeds when compared to the uninoculated one (7.22, 2.86). The lowest dry weight of the seedlings was recorded in control (5.65 and 1.85). *Azospirillum* is considered the most effective plant hormone producer among soil bacteria (Fallik *et al.*, 1996; Horemans *et al.*, 1986) In liquid culture the major hormones biosynthesized by *Azospirillum* are the auxins IAA and related indoles (Baca *et al.*, 1994; Bashan and Levany, 1990; Crozier *et al.*, 1988; Tien *et al.*, 1979). Hence the early growth promotion could be contributed by *Azospirillum sp*.

Highest number of tillers were observed in co inoculation of *Azotobacter sp* (14.25±0.47<sup>c</sup>) with other two PGPR. The response of rice to inoculation with *Azotobacter* was studied by several investigators. Several parameters like plant height, number of tillers, panicle length, number of panicles and grain yields with biofertilizers along with graded levels of nitrogen were studied in rice (Govedarica, 1993). Co inoculation of *B. subtilis* and *A. brasilense* increased the root length and plant height in *Lycopersicon esculentum* (Marco Nuti *et al.*, 2008).

### ESTIMATION OF CHLOROPHYLL

The highest content of total chlorophyll was recorded in T5 – 4.49 (mg/g fr.wt) and T4 – 4.39 (mg/g fr.wt) than control T1 – 3.35 (mg/g fr.wt). The increased chlorophyll content might be linked with the high level of photosynthesis due to uptake of more nitrogen from the soil, which

is fixed by this bacteria. The increased protein content could be due to the presence of kinetin which promotes the amino acid content which in turn helps in active protein synthesis (Tien *et al.*, 1979).

Besides plant-growth effects due to co-inoculation, another aspect taken into account was the impact of these two microorganisms on the indigenous soil microflora, which naturally colonizes rhizosphere and is composed of microbes that could have a crucial role on plant growth and health, and on maintenance of soil quality e.g. nutrient recycling, decomposition of organic matter, plant response to pathogens, plant-growth promotion (Miethling *et al.*, 2000).

## CONCLUSION

The liquid inoculants of PGPR being essential components of organic farming play a vital role in conserving long term soil fertility and maintaining ecological balance. The liquid bioinoculants would be the feasible option for farmers to increase agricultural productivity and create green and clean environment, and thus this could form one of the strategies for the sustainable agricultural practices.

## REFERENCES

- Ahmad, F. Ahmad I. and Khan M. S., "Screening of Free Living Rhizospheric Bacteria for Their Multiple Plant Growth Promoting Activities," 2006, Microbiological Research, **Vol. 36, No. 2**, pp. 1-9.
- Asghar., H.N., Zahir., Z.A., Arshad, M. and Khaliq , A. 2002. Relationship between in vitro production of auxins by rhizobacteria and their growth promoting activities in Brassica juncea.L. Bio. Fertil. Soil., **vol.35**,pp.231-237.
- Glick., B.R. Changping., L. Sibdas, G. and Dumbroff, E.B. 1997. Early development of canola seedlings in the presence of the plant growth promoting rhizobacterium *Pseudomonas putida* GR12-2. Soil Biol. Biochem.,**vol.29**,pp.1233-1239.
- Babalola, O.O .2010 Beneficial bacteria of agricultural importance. Biotechnol Lett 32:1559–1570
- Kloepper, J.W and Beauchamp, C.J. . 1992 A review of issues related to measuring of plant roots by bacteria. Can. J. Microbiol., **vol.38**,pp. 1219–1232.
- Baca, B.E., Soto –Urzua, L.Xochihua – Corona, X.and Cuervo –Garcia,A. 1994. Characterization of two aromatic aminotransferases and production of indole acetic acid in *Azospirillum* strains. *Soil Biol Biochem.*, **26**: 57-63.
- Bashan, Y and Levanony, H.1990. Current status of *Azospirillum* inoculation technology: *Azospirillum* as a challenge for agriculture. *Can.J.Microbiol.*, **36** : 591-608.
- Bashan., Y. Holguin G. and L. E. de-Bashan, 2004..*Azospirillum*- plant relationships: physiological, molecular, agricultural, and environmental advances. *Can. J. Microbiol.*,**vol.50**, pp.521–577.
- Bharathi, R. Vivekananthan, R. Harish, S. Ramanathan A. and R. Samiyappan, 2004 "Rhizobacteria-Based Bio-Formulations for the Management of Fruit Rot Infection in Chillies," Crop Protection, **Vol. 23, No. 6** , pp. 835- 843. doi:10.1016/j.cropro.2004.01.007

Crozier, A. Arruda, P., Jasmin, J.M., Monteiro, A.M 1988. Analysis of indole 3 acetic acid and related indoles in culture medium from *Azospirillum lipoferum* and *Azospirillum brasiliense*. *Appl. Environ. Microbiol.*, **54**: 2833-2837.

Deepak Bhardwaj† , Mohammad Wahid Ansari† , Ranjan Kumar Sahoo and Narendra Tuteja\* 2014. A Biofertilizers function as key player in sustainable agriculture by improving soil fertility, plant tolerance and crop productivity Microbial Cell Factories, **13**:66

Fallik, E and Okon, Y. 1996. Inoculants of *A. brasiliense* biomass production, survival and growth promotion of *Setaria italica* and *Zea mays*. *Soil Biol. Biochem.*, **28**: 123-126.

Govederica, 1993. *Azotobacter* frequency and its effect on some maize hybrids. *Microbiologia*, **29**(2): 129-138.

Horemans , S, de Connick, K, Neuray, J, Hermans, S. 1986. production of plant growth substances by *Azospirillum spp* and the rhizosphere bacteria. *Symbiosis.*, **2** : 341-346.

J.C. Biswas., L.K. Ladha and F.B. Dazzo, 2000. Rhizobia inoculation improves nutrient uptake and growth of lowland rice. *J. Soil. Sci.*, **vol. 64**, pp. 1644- 1650.

Jeun, Y. C., Park, K. S. Kim, C. H., Fowler W. D. And Kloepper, J. W. 2004. “Cytological Observations of Cucumber Plants during Induced Resistance Elicited by Rhizobacteria,” *Biological Control*, **Vol. 29, No. 1**, pp. 34- 42. Doi: 10.1016/S1049-9644(03)00082-3

Marco Nuti , Cristiana Felici Lorenzo Vettori , Enrico Giraldo c , Laura Maria Costantina Forino c , Annita Toffanin a , Anna Maria Tagliasacchi . 2008 Single and co-inoculation of *Bacillus subtilis* and *Azospirillum brasilense* on *Lycopersicon esculentum*: Effects on plant growth and rhizosphere microbial community, *applied soil ecology*, **40**: 260-270.

Martinez – Toledo, M.V de la Rubia T., Moreno, J. and Gonzelez lopez, J. 1988. Root exudates of *Zea mays* and production of auxins, gibberellins and cytokinins by *A. chroococcum*, *Plant and Soil*, **110**: 149-152

Miethling, R., Wieland, G., Backhaus, H. Tebbe, C.C. 2000. Variation of Microbial Rhizosphere Communities in Response to Crop Species, Soil Origin, and Inoculation with *Sinorhizobium meliloti* L33 *Microb Ecol* **41**:43–56

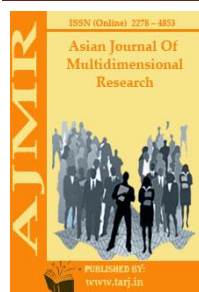
Philippot L, Raaijmakers JM, Lemanceau P, van der Putten WH 2013. Going back to the roots: the microbial ecology of the rhizosphere. *Nat Rev Microbiol* **11**:789–799

Shaukat, K. Affrasayab S. and S. Hasnain, 2006. Growth responses of *Helianthus annuus* to plant growth promoting rhizobacteria used as a biofertilizer, *J. Agri. Res.*, **vol. 1(6)**, pp. 573-581.

Somers, E. Vanderleyden J. and Srinivasan, M. “Rhizosphere Bacterial Signalling: Alove Parade beneath Our Feet,” 2004, *Critical Reviews in Microbiology*, **Vol. No. 4**, 30, pp. 205-240. doi:10.1080/10408410490468786

Tien, T.M., Gaskins, M.H & Hubbel D.H. 1979. Plant growth substances produced by *Azospirillum brasiliense* and their effect on the growth of pearl millet. *Appl. Environ. Microbiol.*, **37**: 1016-1024.

Wu, S. C., Cao, Z. H. Li, Z. G, Cheung, K. C and M. H. Wong, “Effects of Biofertilizer Containing N-Fixer, P and K Solubilizers and AM Fungi on Maize Growth: A Greenhouse Trial,” *Geoderma*, **Vol. 125, No. 1-2**, 2005, pp. 155-166. doi:10.1016/j.geoderma.2004.07.003



## MULTIVARIATE ANALYSIS OF TRUST AND COMMITMENT ON EFFECTIVENESS OF PERFORMANCE APPRAISAL SYSTEM

Dr Kota Neela Mani Kanta\*; Dr. P Srivalli\*\*

\*Assistant Professor,  
Department of Tourism Management,  
Vikrama Simhapuri University,  
Nellore, Andhra Pradesh, INDIA.  
Email id: Kotamani2003@yahoo.co.in

\*\*Associate Professor,  
Dept of Management Studies,  
S. Chavaans Institute of Computer Application,  
Nellore, Andhra Pradesh, INDIA.  
Email id: kotasrivalli87@gmail.com

### ABSTRACT

*The effectiveness of performance appraisal system is influenced by various organizational and employee behavioral variables. In the present study trust and commitment of employees are been considered for the study to examine their effect on various dimensions of effectiveness of performance appraisal system. The study has categorized the dimensions of effectiveness of performance appraisal system into Employee Attitude, Rater Accuracy, Communication, Interpersonal Factors, Training and Process. The study adopts descriptive research design and convenience sampling method in collecting the opinions of employees the study is conducted among employees working in medical device manufacturing companies operating in Bengaluru. The study adopts the multivariate analysis for understanding the influence of trust and commitment on the six dimensions of effectiveness of performance appraisal system. The study was evident in finding the influence of trust and commitment on some of the dimensions of effectiveness of performance appraisal system. The study findings have managerial implications, suggests that employee trust and commitment are two important factors influencing effectiveness of performance appraisal system.*

**KEYWORDS:** *Performance Appraisal System, Effectiveness, Trust, Commitment And Medical Device Manufacturing Companies.*

## **1. INTRODUCTION**

Performance management is a holistic process bringing together many of the elements which go to make up the successful practice of people management, including in particular learning and development. But for this very reason, it is complex and capable of being misunderstood (CIPD, 2008a). 'Performance management is not achievable unless there are effective processes of continuous development. This addresses the core competencies of the organisation and the capabilities of individuals and teams. 'Performance management' should really be called 'performance and development management' is critical because it sends a highly-visible message to people about what is important and valued in the organization.

### **1.1.1 People Management and Capability –**

Armstrong and Ward (2005) advise that organisations must ensure that managers implement performance management systems consistently across the organisation. Managers need to be able to elevate the performance of those around them and their interpersonal skills and behavior will impact on their ability to do this – (either well or not well). Any training therefore, needs to focus on people management skills and on helping managers to change their behavior rather than training them to be 'performance management process' experts;

### **1.1.2 Motivation**

Is often a forgotten and rarely-discussed element in the performance management equation, but in keeping with the Purcell (2003) model, the extent to which managers are able to unlock discretionary effort amongst employees is critical in raising performance levels. Managers need to be advocates of the performance management process, ensuring that objectives are also motivational rather than being purely focused on control and alignment. They also need to be mindful that the quality of the conversations during the process can either motivate or demotivate.

### **1.1.3 Measurement and Reward –**

The indicators or measures that are used to assess a) individual performance and b) organizational effectiveness can be debilitating if they are not right, leading to confusion, inconsistencies and debates about ratings and rankings rather than optimising the powerfulness of the performance management process as a vehicle for performance improvement through feedback and motivation.

Rather than being regarded as the guardians of the process, the Role of HR practitioners should be focused on influencing managers to take charge of the process. Armstrong and Ward (2005) argue that often, too much effort is directed towards compliance issues. Emphasis needs to be placed on those parts of the performance management system - such as the quality of the process - that make the most difference to performance.

### **1.1.4 Clarity of purpose and the Role of Culture**

Within an organization will affect the extent to which performance management resonates and is congruent with the broader culture of the organization in which it is being applied. A performance management system that is not delivering often fails because of organizational shortcomings, such as a mismatch between espoused values and incongruent behaviors, or a lack of clarity over direction, priorities or standards. Aligning the performance management process with the direction of the organization is therefore essential, but it is important to remember that



although performance management will support organizational change, it will not be the exclusive or main driver of it (Armstrong and Ward, 2005).

Armstrong and Ward (2005) contend that managers need to understand that “Performance management is not an addition to their day job, it is their day job” and hence they need to focus on achieving results through their teams rather than being task focused. Organizations need to adopt systems and practices that suit their particular strategy and culture. They also recommend that managers who manage people effectively are rewarded and that there are consequences for those who do not.

## 1.2 Performance Appraisal

Fombrun et al. (1984) makes explicit use of the word Performance when illustrating the Human Resource Cycle - sometimes referred to as the ELC. This model highlights the importance of performance appraisal as a means of determining rewards and/or the need for further development.

Performance appraisal is “a well-established way of providing milestones, feedback, guidance and monitoring for staff. A further development...is tying this appraisal into a larger and more complex system of performance management” (Weightman,1999). CIPD (2008d) support the view that whilst performance appraisal is an important part of performance management, it is only one tool amongst a range of tools that can be used to manage performance. They also highlight the fact that because performance appraisals are most usually carried out by the line managers, rather than HR professionals, it is important that they understand their role in the process and have the right skills to conduct them effectively.

Milkovich and Wigdor (1991) purport that whilst performance appraisal aims to accurately assess the effectiveness of an individual’s job performance, as well as improve organisational performance systems, it is impossible to standardise the context within which the appraisal takes place, or indeed the people who are either appraising or being appraised, further compounding the reasons behind the derision that performance appraisal often receives.

Although the CIPD (2005) purport that there is no one right way to conduct an appraisal, they do advise that there are five key elements to a performance appraisal, underpinned by effective dialogue

## 2. REVIEW OF LITERATURE

Lee Evans, Ki-Hwan Bae, (2017) in his paper examined the possible consequences in performance evaluation prior to implementation of policies. The study has focused on system structure, system dynamics, human behavior and policy constraints. The objectivity of the study is to investigate the limitation of a forced distribution method of performance appraisal system to identify the high performing individuals in the organization. It is assumed that manpower modeling will support to design the plans to meet the future human resource requirements. The study among 2500 army officers reveals that number of raters subordinates have its influence on the accuracy of performance appraisals. Further it is evident from the study that increasing amount of time per individual assignment has little effect on the system accuracy. The research implications suggest that management of organizations need to examine the possible consequences of evaluation policy before implementation. The work of Lee Evans et.al has advances in assessing the framework of system dynamics and structure and their effect on limiting the accuracy of the performance appraisal system.



**Anshu Sharma, Tanuja Sharma, (2017)** has examined the effects of Human resource analytics on employee willingness to improve the performance. The work has analyzed the issued in performance appraisal system which has its influence on employees willingness on improving employee performance and can HR analytics be a possible solution to deal with issues. The work has designed a conceptual framework by converging both academic and practitioners literatures related to HR analytics and performance management. It is evident from the study results that adopting the HR analytics will have negative effect on subjective bias in the Performance appraisal system, consequently effecting positively the employee perception of accuracy and fairness. Further it is evident that it has positive effects on employees satisfaction with PA system and increases the employees willingness to improve performance. The implications of the papers suggest applying HR analytics to improve the performance of employees and direct the future research to test the framework empirically in various organizations.

Anshu Sharma, Jyotsna Bhatnagar, (2017) in their work with an objective of identifying determinants of team engagement emerging as a collective team level phenomenon under the time pressure context. It has examined how teams utilize the social resources under time pressure to develop into highly engaged teams. The study incorporates the literatures of team process, leadership and engagement to develop a conceptual framework of job demands- resources (JD-R) model that explains the emergence of team engagement under time pressure conditions. It is found that working and time pressure condition is challenging, hence the employees utilize the social resources as a coping mechanism to develop into highly engaged teams.

Team climate and leader and engaging behaviors are the two determinants required by the team to achieve team engagement under time pressure. Further the leader engaging behaviors include four components: emotional agility, use of human, efficient delegation and quality feedback. In addition team climate is constituted by three components such as open communication, fun at work and compassion within the team. It is evident from the study results that strong team climate and leaders engaging behaviors tend to have high engagements teams under time pressure. The work suggests that HR and line managers need to develop factors that can enhance team engagement to work efficiently under time pressure situations.

**Anita Sarkar, (2016)** has explored the factors that determine in scrapping of conventional performance appraisal system. In this regard the work has designed a new system of feedback can be aligned with requirements of performance management system. The necessity of incorporating new performance appraisal system since the conventional system is often creating dissatisfaction in employees, deteriorating employee creativity and team work, increasing employee attrition and missing the improvement of performance of employees. The suggested new system promises development of employees on the basis of continuous feedback mechanism. The new system provides the overall needs of the organization and employees.

**John Stokes, John Stinson, (1980)** has propounded that world human resource has many developments from the past 25 years. The personnel production line growing rate is been rolling off due to the new technologies and systems with each new product seen as a important medium for securing higher productivity from the employees for organizations. Performance appraisal is one such product should have proved itself as a real contributor. Hence the present work examines the performance appraisal system has really changed to the new situations and circumstances.

**Khim Ong Kelly, Shi Yun Angela Ang, Wei Ling Chong, Wei Sheng Hu, (2008)**, is sought to examine the factors of performance appraisal system for primary school teachers in Singapore. The work has also examined the how these factors affect the satisfaction, stress experienced, attitudes towards the performance bonus, job satisfaction and motivation and perceived cooperativeness among teachers. The data collected from the primary school teachers in Singapore and factor analysis determines the attributes of performance appraisal system and teacher attitudes and perceptions. The step wise multiple regressions on appraisal system attributes to teacher attitudes and perceptions is employed. It is evident that fairness and clarity of performance appraisal system are having association to greater satisfaction with appraisal system, more positive attitudes towards performance bonus and higher job satisfaction and motivation

The findings indicate that fairness of the performance appraisal system and clarity of appraisal criteria are related to greater satisfaction with the appraisal system, more positive attitudes towards performance bonus, and higher job satisfaction and motivation. Using appraisal criteria that are controllable is associated with greater satisfaction with the appraisal system, less stress experienced with the appraisal system, and higher job satisfaction and motivation. Finally, teachers who report greater trust in their appraiser and more positive assessment of their appraiser's credibility also report more cooperativeness amongst teachers in their school.

**Melissa Tuytens, Geert Devos, (2012)** Performance appraisal is used internationally to improve employee performance, also in the educational field. However, doubts exist about the effectiveness of performance appraisal. This study aims to contribute by expanding the knowledge about important context variables of performance appraisal in secondary education. In particular, the study aims to examine the role of both characteristics of the teacher performance appraisal system and the school leader for procedural justice and perceived feedback utility by teachers.

Both interviews with school leaders and a questionnaire for teachers were used to collect data in 32 schools. Path analyses ( $n=298$ ) were used to test the research model. The results indicate that teacher participation in the teacher performance appraisal system significantly influences the perceived procedural justice by teachers, which in its turn significantly influences the perceived feedback utility. The role of the school leaders is found to be extremely important. Charismatic leadership influences both directly and indirectly (through procedural justice) the perceived feedback utility by teachers.

This study contributes to the research field of (teacher) performance appraisal by studying empirically appraisal system characteristics and leadership characteristics that effect appraisal reactions. In this regard, this study responds to the need for more empirical research to uncover the social context of performance appraisal, especially in the field of education where there is a general skepticism towards teacher appraisal and its possible positive outcomes.

### 3. OBJECTIVES OF THE STUDY

The study objectives are confined as follows:

1. To understand the perception of performance appraisal among users working in medical device companies.

2. To examine influence of trust and organizational commitment on effectiveness of performance appraisal system.

#### 4. Hypothesis

*H1: Organizational commitment has effect on perception towards effectiveness of performance appraisal system.*

*H2: Trust of employees has effect on Perception of users towards effectiveness of Performance appraisal system*

#### 5. RESEARCH METHODOLOGY

The present study is aimed to examine the perceptions of employees both raters and rates towards dimensions of performance appraisal. In addition the study determines the influence of organisation variables such as trust and commitment on performance appraisal. Consequently the study adopts descriptive study design to describe the relationship and levels of perceptions of the study variables. The descriptive study also involves collecting the opinions of employees through structured surveys. The major purpose of descriptive research is description of the state of affairs as it exists at present. In social science and business research we quite often use the term Ex post facto research for descriptive research studies. The main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening. Most ex post facto research projects are used for descriptive studies in which the researcher seeks to measure such items as, for example, frequency of shopping, preferences of people, or similar data.

##### 5.1 Population of the study

The study is intended to examine the effectiveness of performance appraisal practices among the employees working in Medical devices companies working in Bengaluru, Karantaka, India. Medical Devices companies are those which are into manufacturing of equipments and machines used in operation theaters, laboratories, Intensive care units and Incubation centers. The products such as such companies Ventilators, Microscopes, X ray Machine, Cath Lab equipments, CRT Machines and so on. The list of companies identified in Bengaluru city is as follows:

**TABLE: SAMPLING FRAME**

| SL No | Medical Device Companies                 |
|-------|--|
| 1     | SurgiWorld                               |
| 2     | Biorad Medisys Private Limited           |
| 3     | Hi-Tech Equipments Company               |
| 4     | Dispoline India Private Limited          |
| 5     | Biorad Medisys Private Limited           |
| 6     | C Cube Advanced Technologies             |
| 7     | Allengers Medical Systems Limited        |
| 8     | BPL Medical Technologies Private Limited |
| 9     | Biorad Surgical Industries               |
| 10    | Omya Healthcare                          |
| 11    | Dispoline India Private Limited          |
| 12    | Prognosys Medical Systems Pvt Ltd        |
| 13    | Janak Health Care Private Limited        |

|    |  |
|----|--|
| 14 | Forus Health Pvt. Ltd.                       |
| 15 | Olympus Medical Systems India Pvt. Ltd.,     |
| 16 | Bio Medix Devices                            |
| 17 | GE Medical Systems                           |
| 18 | Futura Surgicare – Factory                   |
| 19 | Aster Medispro Private Limited               |
| 20 | Browndove Healthcare Pvt.Ltd.                |
| 21 | Breath Well Medical Systems                  |
| 22 | Prognosys Medical System Ltd                 |
| 23 | Sandor Medicaids Private Limited             |
| 24 | Relief Orthotics                             |
| 25 | V Smart Health Care Device                   |
| 26 | Erkadi Systems                               |
| 27 | Maxlife Health Enterprises Private Limited.  |
| 28 | JK Medical Systems Pvt Ltd                   |
| 29 | Sutures Manufacturing Company                |
| 30 | Bangalore Medical Systems Pvt Ltd            |
| 31 | Remidio Innovative Solutions Pvt Ltd         |
| 32 | Neokraft medical Private Limited             |
| 33 | Coeo Labs                                    |
| 34 | Blue Neem Medical Devices Private Limited    |
| 35 | SMC Medical Manufacturing Pvt Ltd            |
| 36 | Vascular Concepts Limited                    |
| 37 | Fanem Medical Devices India Private Limited  |
| 38 | Miracle Electronic Devices Private Limited   |
| 39 | Neurosynaptic Communications Private Limited |
| 40 | Remidio Innovative Solutions Pvt Ltd         |

The study has identified the most prominent and focused companies in manufacturing of medical devices in Bengaluru. The companies identified based on their volume of business, listing in stock exchanges and overall best companies. There could be other companies in operating in the above industry, but not considered due its low prominence in the industry. These medical device companies are having operations confined to India and some extended to foreign operations.

Among the above organisations around 1500 employees are been expected working at managerial level. The organizations might be having branches in other parts of India and Foreign nations, but our study is confined to examine the employees working in above company branches operating in Bengaluru.

## 5.2 Sample Design

Sampling is the process of selecting units (e.g., people, organizations) from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen. Let's begin by covering some of the key terms in sampling like "population" and "sampling frame." Then, because some types of sampling rely upon quantitative models, we'll talk about some of the statistical terms used in sampling. Finally,

sampling methods is categorized into probability and Non probability sampling methods and work through the major types in each.

**Non Probability sampling** is a type of unit sampling where it is not known which of the units will be picked to be sampled, and where some of the units have a zero probability of being chosen. The difference between non probability and probability sampling is that non probability sampling does not involve random selection and probability sampling does. **Convenience sampling** is a statistical method of drawing representative data by selecting people because of the ease of their volunteering or selecting units because of their availability or easy access. The advantages of this type of sampling are the availability and the quickness with which data can be gathered. The disadvantages are the risk that the sample might not represent the population as a whole, and it might be biased by volunteers.

Hence the present study follows **non probabilistic – convenience sampling method**. The study is interested to collect the primary data from the raters and ratee's working in medical device manufacturing organisations operating in Bengaluru. The reason to select Bengaluru city is due its wide density operations of medical device companies comparatively to other places in our country.

The study selects two companies for collecting the opinions of the rater's and ratee's due to unwillingness of companies, time and financial constraints. The following ten companies were selected

1. **Forus Health Private Limited**
2. **Neokraft Medical Private Limited**
3. **Biorad Medisys Private Limited**
4. **Neurosynaptic Communications Private Limited**
5. **Relief Orthotics**
6. **V Smart Health Care Device**
7. **Futura Surgicare – Factory**
8. **Aster Medispro Private Limited**
9. **Browndove Healthcare Pvt.Ltd.**
10. **Olympus Medical Systems India Pvt. Ltd.,**

The above ten companies have given full support by giving information to conduct the survey. The researcher visited to the above companies for collection of primary data from employees. The study distributes the questionnaire to the employees who has participated in performance practices (Ratee's) and who has conducted performance appraisal for their employees (Rater's).

### **5.3 Sample Size**

The sample size of the study is calculated using [www.raosoft.com](http://www.raosoft.com) website. The inputs to be given for calculating sample size are i) Margin of error accepted ii) Confidence level iii) Population size and iv) Response distribution.

The margin of error is the amount of error that you can tolerate. If 90% of respondents answer *yes*, while 10% answer *no*, you may be able to tolerate a larger amount of error than if the respondents are split 50-50 or 45-55.

The confidence level is the amount of uncertainty you can tolerate. Suppose that you have 20 yes-no questions in your survey. With a confidence level of 95%, you would expect that for one of the questions (1 in 20), the percentage of people who answer *yes* would be more than the margin of error away from the true answer. The true answer is the percentage you would get if you exhaustively interviewed everyone.

Population is how many people are there to choose your random sample from? The sample size doesn't change much for populations larger than 20,000. The study assumes a sample size of 1500. Response distribution is meant as suppose for each question, what do you expect the results will be? If the sample is skewed highly one way or the other, the population probably too is skewed. If it is not known, use 50%, which gives the largest sample size.

The study considered a Margin of error equal to standard of 5%, Confidence level 95%, Population size of 1500 (Assumed value, since the exact number of employees is not known) employees working in medical device companies in bengaluru and Response distribution of 50%. Finally the calculated value of sample size is 306. The study considers taking greater than calculated value of 306 i.e. 310 by rounding to the nearest value of calculated sample size.

#### **5.4 Data Source**

The study collects both primary and secondary data; the primary data is collected through structured questionnaire. The questionnaire is administered personally to employees and their opinions are collected through the questionnaire instrument. The primary data is collected for the purpose of analysis of variables of study.

The secondary data is collected through Journals, Books, dissertations and conference papers. The secondary is collected for the purpose of literature collection and for planning the study. The following sections will discuss the questionnaire design and variables of the study.

#### **5.5 Questionnaire Design**

The study designs a structured questionnaire with a covering letter to administer to employees working in multinational corporations as shown in appendix. The questionnaire consists of two sections i) Demographic characteristics and ii) Variables of study. The demographic question like i) Age Group, ii) Gender iii) Year of Experience iv) Educational Qualification and v) Designation are present.

The second section consists of questions regarding the variables of study like i) Perception towards Performance Appraisal ii) Trust and iii) Organisational Commitment.

### **6. Multivariate analysis of Variance (MANOVA) of effectiveness of performance appraisal system dimensions**

The preceding section has analyzed the effectiveness of performance appraisal system model in holistic approach; hence MANOVA is employed to understand the main effects of the model in group. In other words, the main effects of independent variables on the dimensions of performance appraisal system likewise Employee Attitude, Rater Accuracy, Communication, Inter personal factors, Training and Process variables is performed and the results are summarized in the following table.



## 6.1 Trust

The following results indicate that there is a overall multivariate significance of trust ( $Wilks^{\wedge} = .122$ ,  $p\text{-value} = .003$ ), which is attributable to dimensions of performance appraisal system as follows Employee Attitude ( $F = 1.303$ ,  $p\text{-value} = .159$ ), Rater Accuracy ( $F = 1.431$ ,  $p\text{-value} = .090$ ), Communication ( $F = 1.918$ ,  $p\text{-value} = .007$ ), Inter personal factors ( $F = 2.842$ ,  $p\text{-value} = .000$ ), Training ( $F = 1.878$ ,  $p\text{-value} = .009$ ) and Process ( $F = 3.921$ ,  $p\text{-value} = .000$ ). From the above results it indicates that except employee attitude and rater accuracy the remaining dimensions of appraisal system has significant main effects of trust.

$Wilks^{\wedge}$  explains the relevance of the independent variable i.e. trust to the overall dependent variables i.e. dimensions of appraisal system. The  $Wilks^{\wedge}$  more nearer to 1 is construed as independent variables more relevant to the dependent variables; on contrary the  $Wilks^{\wedge}$  nearer to zero is said to be irrelevant to the group of dependent variables. Trust is significant in its main effects on the dimensions of appraisal system except employee attitude and rater accuracy. In addition the  $Wilks^{\wedge}$  is at .122 represents that trust is has weaker relevance to the dimensions of performance appraisal system. The  $\eta^2$  represents partial eta square, which explains the variance in group of dependent variables made by the independent variable. In the case of trust  $\eta^2 = .296$  reveals that it has only 29.6 % of variance in the group of dependent variables, i.e. dimensions of performance appraisal system.

Furthermore the next half of the table explains ANOVA results. It is understood that trust has significant difference of means in the dimensions of appraisal system likewise Communication, Inter personal factors, Training and Process. Conversely Trust has insignificant difference of mean in the dimensions of Employee Attitude and Rater Accuracy as mentioned above. Individual partial eta square of Communication ( $\eta^2 = 0.365$ ), Inter personal factors ( $\eta^2 = 0.459$ ), Training ( $\eta^2 = .360$ ) and Process ( $\eta^2 = 0.540$ ) explains that trust could explain 36.5% of variance in communication, 45.9% of variance in interpersonal factors, 36% of variance in training and 54% of variance in process dimensions of performance appraisal system.

## 6.2 Organisational Commitment

The following results indicate that there is a overall multivariate significance of organisational commitment ( $Wilks^{\wedge} = .148$ ,  $p\text{-value} = .000$ ), which is attributable to dimensions of performance appraisal system as follows Employee Attitude ( $F = 3.602$ ,  $p\text{-value} = .000$ ), Rater Accuracy ( $F = 7.064$ ,  $p\text{-value} = .090$ ), Communication ( $F = .989$ ,  $p\text{-value} = .474$ ), Inter personal factors ( $F = 2.034$ ,  $p\text{-value} = .017$ ), Training ( $F = 1.238$ ,  $p\text{-value} = .252$ ) and Process ( $F = 6.807$ ,  $p\text{-value} = .000$ ). From the above results it indicates that except communication and training the remaining dimensions of appraisal system has significant main effects of organisational commitment.

$Wilks^{\wedge}$  explains the relevance of the independent variable i.e. organisational commitment to the overall dependent variables i.e. dimensions of appraisal system. The  $Wilks^{\wedge}$  more nearer to 1 is construed as independent variables more relevant to the dependent variables; on contrary the  $Wilks^{\wedge}$  nearer to zero is said to be irrelevant to the group of dependent variables. Organisational Commitment is significant in its main effects on the dimensions of appraisal system except Communication and Training. In addition the  $Wilks^{\wedge}$  is at .148 represents that organisational commitment has weaker relevance to the dimensions of performance appraisal system. The  $\eta^2$  represents partial eta square, which explains the variance in group of dependent variables made by the independent variable. In the case of organisational commitment  $\eta^2 = .273$  reveals that it has

only 27.3 % of variance in the group of dependent variables, i.e. dimensions of performance appraisal system.

Furthermore the next half of the table explains ANOVA results. It is understood that organisational commitment has significant difference of means in the dimensions of appraisal system likewise Employee Attitude, Rater Accuracy, Inter personal factors and Process. Conversely organisational commitment has insignificant difference of means in the dimensions of Communication and training dimensions as mentioned above. Individual partial eta square of Employee Attitude ( $\eta^2 = 0.350$ ), Rater Accuracy ( $\eta^2 = 0.514$ ), Inter personal factors ( $\eta^2 = 0.233$ ), and Process ( $\eta^2 = 0.504$ ) explains that organisational commitment could explain 35% of variance in employee attitude, 51.4 % of variance in rater accuracy, 23.3% of variance in interpersonal factors and 50.4% of variance in process dimensions of performance appraisal system.

**TABLE 5.10: MULTIVARIATE ANALYSIS ON DIMENSIONS OF EFFECTIVENESS OF PERFORMANCE APPRAISAL SYSTEM**

| Independent Variables     | Multivariate Tests       |         |                 | ANOVA Dependent Variables        |                                  |                                  |                                  |                                  |                                  |
|---------------------------|--------------------------|---------|-----------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
|                           | F value Effect size      | p-value | Wilks $\Lambda$ | Employee Attitude                | Rater Accuracy                   | Communication                    | Interpersonal Factors            | Training                         | Process                          |
| Trust                     | 1.360<br>$\eta^2 = .296$ | .003    | .122            | 1.303<br>$\eta^2 = .280$<br>.159 | 1.431<br>$\eta^2 = .300$<br>.090 | 1.918<br>$\eta^2 = .365$<br>.007 | 2.842<br>$\eta^2 = .459$<br>.000 | 1.878<br>$\eta^2 = .360$<br>.009 | 3.921<br>$\eta^2 = .540$<br>.000 |
| Organisational Commitment | 2.441<br>$\eta^2 = .273$ | .000    | .148            | 3.602<br>$\eta^2 = .350$<br>.000 | 7.064<br>$\eta^2 = .514$<br>.000 | .989<br>$\eta^2 = .129$<br>.474  | 2.034<br>$\eta^2 = .233$<br>.017 | 1.238<br>$\eta^2 = .156$<br>.252 | 6.807<br>$\eta^2 = .504$<br>.000 |

## 7. DISCUSSION

### 7. DISCUSSION AND FINDINGS

The Multivariate Analysis conducted to understand the magnitude of trust, organisational commitment on the dimensions of effectiveness of performance appraisal system. The results reveal that trust and organisational commitment are having significantly relevance with dimensions of effectiveness of performance appraisal system. Trust has significant influence on all the dimensions of performance appraisal system except employee attitude. In addition organisational commitment too has exhibited significant variance in the dimensions of performance appraisal system except in the dimensions of communication and training.

Hence it can be concluded that trust and organisational commitment are significant variables in influencing effectiveness of performance appraisal system. However the study also states that

apart from these variables there could be other significant variables in explaining effectiveness of performance appraisal system. Since the variance explained by these variable though are significant, but are less than fifty percent of variance in effectiveness of performance appraisal system.

## **8. IMPLICATIONS**

The study has arrived at insightful results, the following section discuss the implication of these results arrived in the present study. The study has found that trust and organisational commitment are predictors of effectiveness of performance appraisal system. Hence the organisations need to enhance the trust and commitment levels of their employees by designing various policies in ensuring transparency, developing fairness, morale of employees. The employees need to be made participative in decision making of various policies so that the employees can abide to those decisions. This can also enhance the understanding the intentions of organization, that employees are been valued for their decisions.

Performance appraisal system should be utilized for enhancing the skills and competencies of the employees rather than for administrative actions such as promotions and hike in salaries. This can help the organizations to improve the efficiencies of the employees and thereon the organizations. Organizational commitment is enhanced by following employee oriented decisions makings rather that confining to organization oriented. Organizations need to understand the basic feeling and necessities of the employees and provide the complete support to the interests of employees. This can develop the feeling of association of employees to organisation and thereon enhance the commitment towards organisation.

Hence it should be understood that trust and organisational commitment can enhance the effectiveness of performance appraisal system by supportive and cooperative behavior in participating through appraisal system by employees.

## **9. FUTURE STUDIES**

The study has contributed significant insights to the body of knowledge in finding the existence of relationships between trust, organisational commitment with performance appraisal system. The study has ascertained that trust and organisational commitment can develop the effectiveness of performance appraisal system. However the study has also revealed that the two predictors trust and organisational commitment are not only the predictors, there could be other variables that influence effectiveness of performance appraisal system. Hence the future studies can focus on identifying various other variables that could enhance effectiveness of performance appraisal system.

The present study is confined to demographics of employees, the future studies may concentrate on collecting the information of procedures and polices followed by organisation in implementing performance appraisal system; likewise methods, objectives, feedback, frequency and etc., of performance appraisal system. This could given insights on the drawbacks in implementation of appraisal system, with significant insights we could develop the appraisal system effectively.

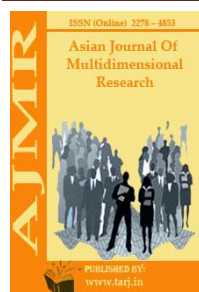
## **10. CONCLUSION**

Performance appraisal system is a significant function of human resource department with multiple objectives and dimensionality. The appraisal system need to view in various aspects and

utilized as tool for various administrative, employee career development and organisation efficiency prospective. It is ascertained from the present studies that even though trust and organisational commitment is significant predictors of effectiveness of performance appraisal system. The study has arrived to the above conclusions after comprehensive adoption of methodology and statistical analysis. It is now the organizations need to focus on enhancing the trust of employees towards their superiors and management. In addition the organisation needs to focus on designing those activities that could enhance commitment of employees through employee's oriented initiatives.

## 11. REFERENCES

1. Anita Sarkar, (2016) "Is it time to do away with Annual Performance Appraisal System?: Benefits and challenges ahead", Human Resource Management International Digest, Vol. 24 Issue: 3, pp.7-10,
2. Anshu Sharm, Tanju Sharma, (2017) 'HR Analytics and performance appraisal system: A Conceptual framework for employee performance improvement', Management Research review, Vol. 40 Issue: 6, pp. 684-697.
3. Anshu Sharma, Jyostna Bhatnagar, M P Jaiswal, and Mohan Thite,(2017), 'An Integrative Perspective of Organizational Learning: Test of Moderated Mediation', Academy of Management Proceedings, Vol 1.
4. Armstrong, K. & Baron, A (2004), Managing Performance: Performance management in action .London, CIPD.
5. Armstrong, K. & Ward, A. (2005). What makes for effective performance management? London: the work Foundation.
6. Fombrun, C.J 1984. The external context of human resource management. In C.J. Fombrun, N.M. Tichy, & M.A Devanna, (Eds), Strategic Human Resource Management: 3-18. New York: John Wiley and Sons.
7. John Stokes, John Stinson, (1980) "Re-examining Appraisal: Breathing Fresh Air into the Performance Appraisal System", Leadership & Organization Development Journal, Vol. 1 Issue: 3, pp.2-7.
8. Khim Ong Kelly, Shi Yun Angela Ang, Wei Ling Chong, Wei Sheng Hu, (2008) "Teacher appraisal and its outcomes in Singapore primary schools", Journal of Educational Administration, Vol. 46 Issue: 1, pp.39-54.
9. Lee Evans, Ki – Hwan Bae, (2007), 'Simulation-based analysis of a forced distribution performance appraisal system', Journal of defense analytics and logistics, Vol. 1 Issue: 2, pp.120-136.
10. Melissa Tuytens, Geert Devos, (2012) "Importance of system and leadership in performance appraisal", Personnel Review, Vol. 41 Issue: 6, pp.756-776.
11. Milkovich, G T., & Wigdor, A.K (Eds). (1991). Pay for Performance: evaluating performance appraisal and merit pay. Washington, DC, US: National Academy Press.
12. Purcell J, kinnie N, Hutchinson S, Rayton B, Swart J, understanding the People and Performance Link: unlocking the black box, CIPD, 2003.



## ANTECEDENTS OF BRAND IMAGE OF A UNIVERSITY

**Mr. Abdul Rahim Ahmed Munshi\***

\*Assistant Professor,  
ITM Universe Vadodara,  
Gujarat, INDIA.  
Email id: rahimmunshi\_85@yahoo.co.in

### ABSTRACT

*With demand for higher education increasing every passing day and the entry of corporates in the education sector, brand equity will play a very important role in influencing the admission decision of prospective students. Brand equity has got two components, brand awareness and brand image. Brand awareness includes recognition and recall of a brand; brand image consists of strong, favorable and unique associations that consumers have for a brand. This research paper talks about factors influencing an education institute's brand image. Based on literature review a 25 factors were identified that can influence the brand image of an institute. Using these factors, a questionnaire was prepared and data was collected from students of various schools, coaching classes and institutes of Vadodara city. Factor analysis was used for data reduction and 7 factors were extracted having influence on the University's Brand Image.*

**KEYWORDS:** Education, Brand Image, Brand Equity, Brand Recall.

## 1. INTRODUCTION

Brand Image as a construct has been relatively unexplored in context of education industry and has an of scope as education is a service which is high on credence attributes. This is a relatively new area of research especially in a tier-2 city like Vadodara. There are several changes in the external environment of the education industry that has led to intense competition in the education industry. The need of the hour for universities is to create a distinct image in order to maintain their competitiveness. Government policies with respect to setting up universities, advances in information technology leading to proliferation of online courses, MOOCs and the like have only infuriated the competition within the education industry. The above factors have made it extremely difficult for universities to attract students, recruit teaching staff and find additional sources of funding. Many universities in recent times have increased investments in creating brand image in order to establish their foothold in a competitive industry.

In this research study we have identified factors that can influence the educational institutions image and the degree to which they have an influence on the brand image. This study can help educational institutes with the necessary inputs to build their brand image.

## 2. LITERATURE REVIEW

Literature usually distinguishes between identity and image. Identity speaks about what an organization is in reality and image speaks of how an organization is perceived from its environment. There is generally a difference between what an organization is in reality and how it looks from outside. This applies to universities as well as other organizations. Brand image can be projected by organizational actions, and it can also be enhanced or damaged by external parties, particularly the media (Rees and Park, 2008).

Brand Image has great importance in context of companies as well as universities. It is becoming very important for universities to have a distinct image so that it can become competitive in the market (Perez, Meneses and Palacio, 2002). Public sector organizations have started realizing the importance of reputation as it is becoming increasingly important for their survival (Luomaaho, 2007).

Brand image consists of cognitive and affective component and usually the cognitive component is an antecedent of the affective component. Brand Image is more influenced by the affective component than the cognitive component.

One approach to creation of brand image says that image is the result of how messages from the organization are interpreted overtime by customers and consumers. Messages about the organization delivered by media and other observers like friends, family or employees of a firm also help in creating image for an organization organization (Fombrun and Shanley, 1990; Arpan et al., 2003).

There are two components of Brand Image namely functional, related to tangible stimuli that can be easily measured and psychological conditions that become apparent in feelings and attitudes (Palacio, Meneses and Pérez, 2002).

Arpan et al. (2003) reveal in their research that participants consider multiple factors while considering a university's image. These included academics, social life, athletics, recognition and awards and also physical environment. The academics component included worth of the degree in the job market, degree-program characteristics and characteristics of student body.



A study identified several university attributes that might determine student admissions, found several factors that included ranking of the university, family connections, overall education quality, size of the university, emphasis on sports, location of the university, appearance of the buildings, faculty quality, diversity of students, existence of family atmosphere, news and media coverage, support of administration staff. (Arpan et al., 2003).

Kazoleas et al. (2001) found that image factors that were controlled by the university. i.e courses, academic programs, sports, libraries, technical facilities etc were stronger predictors of brand image than demographic characteristics of respondents and personal experience with the university had a greater impact than media exposure related to the university (Arpan et al., 2003)

Brand image of education institutes are formed through marketing communications, buzz marketing, and actual experiences (Ivy,2001). Kazoleas et al. (2001) found in their study that university image was greatly influenced by actual experiences and close relationships also had a great impact on perceptions. Marketing efforts were not very important. Bennett and Ali Choudhury (2009) indicated in their study that word of mouth especially from close acquaintances and direct experiences are more important in formation of Brand Image.

The concept of corporate image is well researched but image in service oriented organizations like education institutions is still in nascent stages (Sung & Yang, 2008). Because of service oriented character of universities, image has great importance. As services are intangible in nature and can be evaluated only after consumption, image plays a very important role in predicting the outcome of service production (Nguyen & LeBlanc, 2001).

Choosing a university to apply is a high involvement decision that has a long term impact on a person's life and career and hence carries high risk (Simoese&Soares, 2010). Purpose of branding is to reduce the perceived risk and help consumers to make purchase decisions more confidently (Nandan, 2005). Similarly, Mourad et al. (2011) emphasized the role of brand equity as a risk reducer in university selection. Wilkins and Huisman (2013) stated that consumers which purchasing services, expensive products pay more attention to corporate image, same is the case while choosing a university.

Even though research on brand image of universities have grown lately and more factors affecting university image are identified, factors suffer from dissimilarity. There are studies that indicate that atmosphere and academics form one factor (Palacio et al., 2002) or overall brand image includes facilities and teaching quality (Duarte et al., 2010; Kazoleas et al., 2001) while other studies consider them as individual factors.

Universities increased understanding of the importance of attracting students has increased attention towards brand image in the field of research (Sung & Yang, 2008).

### **3. RESEARCH OBJECTIVES:**

1. Identifying the factors that influence an educational institutions image.
2. Identifying the importance of individual factors affecting educational institutions image.

### **4. METHODOLOGY**

Research Design: Descriptive Research

Sampling Method: Non-Probability Convenience Sampling

Sample Size: 635 Respondents

Data Collection Instrument: Self-Structured Questionnaire

The questionnaire comprised questions relating to elements that determine educational a universities image. The questionnaire consisted of close-ended questions. 25 elements were asked to be rated on a scale of 1-10, 1 being least important and 10 being most important.

The sample consisted of 300 male students and 335 female students (N=635), these were students of various universities of Vadodara namely, MS University, Parul University, Navrachna University, Sumandeep University and ITM Vocational University.

### ***Test of Reliability:***

Reliability of the instrument was tested using Cronbach's Alpha, the value of which was 0.961, which indicated good reliability.

## **5. RESULTS**

Questions were asked to the respondents pertaining to how important do they consider the below factors while considering to take an admission in an institute, they were asked to rate the factors on a scale of 1-10 from least important to extremely important.

- 1. Design of Buildings and Infrastructure;*
- 2. Website;*
- 3. Location of University;*
- 4. Lecture Quality;*
- 5. Study Tours & Industrial Visits;*
- 6. Knowledge transfer from faculty to students;*
- 7. Classroom Ambience and Comfort;*
- 8. Access to quality books, journals and online material from the library;*
- 9. Research emphasis and environment;*
- 10. Student associations;*
- 11. Reward and Recognitions;*
- 12. Institute's contributions towards social development*
- 13. Industry-Academia Interface;*
- 14. Job opportunities post completion of studies;*
- 15. MOUs with foreign universities for International Exposure;*
- 16. Response from faculties and Accessibility of faculties;*
- 17. Support from administration department;*
- 18. Grading System;*
- 19. Extra Curricular Activities, Sports and Events;*
- 20. Quality of fellow students;*
- 21. Adequacy of Information about Institute*
- 22. Accessibility of study related information;*
- 23. Accreditation from Regulatory Bodies;*
- 24. Institute Domestic Ranking*
- 25. Institute Global Ranking;*

**TABLE NO.1: THE FREQUENCY VARIABLES REPRESENTING THE BRAND IMAGE OF A UNIVERSITY**

|    | N=635 |         | Mean   | Median | Std. Deviation | Min | Max |
|----|-------|---------|--------|--------|----------------|-----|-----|
|    | Valid | Missing |        |        |                |     |     |
| 1  | 635   | 0       | 5.5741 | 7      | 3.56517        | 3   | 10  |
| 2  | 635   | 0       | 6.1705 | 6      | 2.14721        | 2   | 10  |
| 3  | 635   | 0       | 7.1845 | 8      | 1.70122        | 5   | 10  |
| 4  | 635   | 0       | 8.8182 | 8      | 2.73613        | 6   | 10  |
| 5  | 635   | 0       | 6.4430 | 6      | 2.14122        | 3   | 10  |
| 6  | 635   | 0       | 8.6583 | 6      | 1.13717        | 5   | 10  |
| 7  | 635   | 0       | 6.6264 | 8      | 2.17266        | 5   | 10  |
| 8  | 635   | 0       | 7.2283 | 7      | 1.57261        | 4   | 10  |
| 9  | 635   | 0       | 6.6578 | 7      | 1.01020        | 3   | 10  |
| 10 | 635   | 0       | 5.8845 | 8      | 1.06251        | 1   | 10  |
| 11 | 635   | 0       | 7.8236 | 8      | 1.83723        | 4   | 10  |
| 12 | 635   | 0       | 6.7491 | 8      | 1.03312        | 1   | 10  |
| 13 | 635   | 0       | 6.5747 | 8      | 1.83082        | 3   | 10  |
| 14 | 635   | 0       | 8.9832 | 8      | 2.14590        | 7   | 10  |
| 15 | 635   | 0       | 6.8764 | 7      | 2.40273        | 3   | 10  |
| 16 | 635   | 0       | 7.9655 | 8      | 1.16351        | 5   | 10  |
| 17 | 635   | 0       | 6.3210 | 7      | 2.17251        | 3   | 10  |
| 18 | 635   | 0       | 8.4690 | 8      | 1.31852        | 6   | 10  |
| 19 | 635   | 0       | 6.4814 | 6      | 2.22411        | 2   | 10  |
| 20 | 635   | 0       | 7.8917 | 8      | 1.14321        | 3   | 10  |
| 21 | 635   | 0       | 7.3652 | 6      | 1.32847        | 3   | 10  |
| 22 | 635   | 0       | 6.0185 | 7      | 1.04751        | 3   | 10  |
| 23 | 635   | 0       | 7.3411 | 9      | 2.14580        | 4   | 10  |
| 24 | 635   | 0       | 7.6704 | 8      | 1.62051        | 4   | 10  |
| 25 | 635   | 0       | 6.6332 | 6      | 1.13947        | 2   | 10  |

Factor Analysis was used for data reduction.

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Suppression of small coefficients: Absolute value below: 0.6.

**TABLE 2: ROTATED COMPONENT MATRIX (A, B)**

| Component                                   | 1    | 2    | 3 | 4 | 5 | 6 | 7    |
|---|------|------|---|---|---|---|------|
| Design of Buildings and Infrastructure      |      |      |   |   |   |   | .666 |
| Website                                     |      |      |   |   |   |   | .654 |
| Location of University                      |      | .678 |   |   |   |   |      |
| Study Tours & Industrial Visits             |      |      |   |   |   |   |      |
| Lecture Quality                             | .888 |      |   |   |   |   |      |
| Knowledge transfer from faculty to students | .834 |      |   |   |   |   |      |

|   |      |      |      |      |      |      |  |
|---|------|------|------|------|------|------|--|
| <b>Response from faculties and Accessibility of faculties</b>                 | .766 |      |      |      |      |      |  |
| <b>Access to quality books, journals and online material from the library</b> |      |      |      |      |      | .663 |  |
| <b>Research emphasis and environment</b>                                      |      |      |      |      |      | .701 |  |
| <b>Student associations</b>   |      |      |      |      |      |      |  |
| <b>Reward and Recognitions</b>  |      |      | .786 |      |      |      |  |
| <b>Institute's contributions towards social development</b>                   |      |      |      |      |      |      |  |
| <b>Institute-Academia Interface</b>   |      |      |      | .761 |      |      |  |
| <b>Job opportunities post completion of studies</b>                           |      |      |      | .745 |      |      |  |
| <b>MOUs with foreign universities for International Exposure</b>              |      |      |      |      |      |      |  |
| <b>Classroom Ambience and Comfort</b>   |      |      |      |      |      |      |  |
| <b>Support from administration department</b>                                 |      |      |      |      |      |      |  |
| <b>Grading System</b>   |      |      |      | .747 |      |      |  |
| <b>Extra Curricular Activities, Sports and Events</b>                         |      |      |      |      | .754 |      |  |
| <b>Quality of fellow students</b>   |      |      | .668 |      |      |      |  |
| <b>Adequacy of Information about Institute</b>                                |      |      |      |      |      |      |  |
| <b>Accessibility of study related information</b>                             |      |      |      |      |      |      |  |
| <b>Accreditation from Regulatory Bodies</b>                                   |      | .763 |      |      |      |      |  |
| <b>Institute Domestic Ranking</b>   |      | .845 |      |      |      |      |  |
| <b>Institute Global Ranking</b>   |      |      |      |      |      |      |  |

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 10 iterations.

Factor analysis results helped us in getting seven new factors from 25 elements of brand image. Variables with small coefficients with absolute values below 0.6 were suppressed. The eight new variables accounted for 76.4% of the variance.

The new variables (factors) were:

Factor 1: *“Lectures and Faculty Quality”*

Factor 2: *“Location of the University and design of buildings”*

Factor 3: *“Grading System and Accreditation”*

Factor 4: *“Reward and Recognitions”*

Factor 5: *“Job opportunities”*

Factor 6: *“Quality of fellow students”*

Factor 7: *“Research and Extra Curricular Activities”*

## 6. Limitations and further recommendations

Data collection was restricted to Vadodara city only and sample size considered in this research was limited to 635 respondents only, this might reduce the overall impact of this study.

*Further Recommendations:*

In this study the factors having high correlation among each other are identified and reported, further models can be developed to study which factors have a greater impact on the brand image of Universities.

**7. CONCLUSION**

Many studies on brand image with respect to tangible goods have been conducted till date, but studies on brand image with respect to the service industry and more specifically on education industry are limited. In this research study an effort has been made to identify those factors that can act as antecedents of brand image for a university. 29 factors were identified that can act as antecedents of the brand image of a university and using factor analysis, 7 factors were, *Lectures and Faculty Quality, Location of the University and design of buildings, Grading System and Accreditation, Reward and Recognitions, Job opportunities, Quality of fellow students and Research and Extra Curricular Activities.*

Results of this research can be used by Marketing and Branding practitioners in University departments, advertising and branding agencies for developing marketing and branding strategies.

**8. REFERENCES**

- Arpan, L. M. et al. (2003). A cognitive approach to understanding university image. *Corporate Communications: An International Journal*, 8(2), 97 – 113, DOI: 10.1108/1356328031047535.
- Barnett, M. L. L., Jermier, J. M. and Lafferty, B. A. (2006). Corporate Reputation: The Definitional Landscape. *Corporate Reputation Review*, 9(1), 26 – 38, DOI: 10.1057/palgrave.crr.1550012.
- Brown, T. J. et al. (2006), Suggested Terminology, Identity, Intended Image, Construed Image, and Reputation: An Interdisciplinary Framework. *Journal of the Academy of Marketing Science*, 34(99), 99-106. DOI: 10.1177/0092070305284969.
- Bunzel, D. L. (2007). Universities sell their brands. *Journal of Product & Brand Management*, 16(2), 152 - 153. DOI: 10.1108/10610420710740034.
- Chun, R. (2005). Corporate reputation: Meaning and measurement. *International Journal of Management Reviews*, 7(2), 91-109. DOI: 10.1111/j.1468-2370.2005.00109.x.
- Fombrun, C. and Shanley, M. (1990). What's in a name? Reputation building and corporate strategy. *Academy of Management Journal*, 33(2), 233-258.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*: Boston Pitman.
- Gordon, J. and Berhow, S. (2009). University websites and dialogic features for building relationships with potential students. *Public Relations Review*, 35, 150–152. DOI: 10.1016/j.pubrev.2008.11.003.
- Gray, E. R. and Balmer, J. M. T. (1998). Managing Corporate Image and Corporate Reputation. *Long Range Planning*, 31(5), 695- 702. DOI: 10.1016/S0024-6301(98)00074-0.
- Helgesen, Ø. and Nettet, E. (2007). Images, Satisfaction and Antecedents: Drivers of Student Loyalty? A Case Study of a Norwegian University College. *Corporate Reputation Review*, 10(1), 38-59. DOI: 10.1057/palgrave.crr.1550037.

Kazoleas, D., Kim, Y. and Moffit, M. A. (2001). Institutional image: a case study. *Corporate Communications: An International Journal*, 6(4), 205-216. DOI: 10.1108/EUM000000000006148.

Luoma-aho, V. (2007). Neutral Reputation and Public Sector Organizations. *Corporate Reputation Review*, 10(2), 124-143. DOI: 10.1057/palgrave.ccr.1550043.

Organizacija, Volume 43 Research papers Number 2, March-April 2010

Luque-Martínez, T. and Del Barrio-García, S. Modelling university image: The teaching staff viewpoint. *Public Relations Review*, In Press, Corrected Proof. DOI: 10.1016/j.pubrev.2009.03.004.

Oplatka, I. (2002). Implicit contradictions in public messages of “low-stratified” HE institutions: the case of Israeli teacher training colleges. *International Journal of Educational Management*, 16(5), 248 - 256. DOI: 10.1108/09513540210434621.

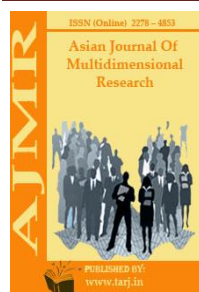
Palacio, A. B., Meneses, G. D. and Pérez, P. J. P. (2002). The configuration of the university image and its relationship with the satisfaction of students. *Journal of Educational Administration*, 40(5), 486 - 505. DOI: 10.1108/09578230210440311.

Park, H. and Rees, K. (2008): Motivators of fair labor management and the role of top management in the US clothing/footwear industry. *Journal of Fashion Marketing and Management*, 12 (4), 487-501. DOI: 10.1108/13612020810906146.

Rose, C. and Thomsen, S. (2004). The Impact of Corporate Reputation on Performance: Some Danish Evidence. *European Management Journal*, 22(2), 201-210. DOI:10.1016/j.emj.2004.01.012.

Schwaiger, M. (2004). Components and Parameters of Corporate Reputation - An Empirical Study. *Schmalenbach Business Review*, 56, 46-71.





## POLITICAL PARTICIPATION AND REPRESENTATION OF WOMEN IN INDIAN POLITICS: A STUDY

Dr. Rajinder Singh\*

\*Assistant Professor,  
Department of Political Science,  
University College, Moonak,  
District Sangrur, Punjab, INDIA.  
Email id: parassinghpatran@gmail.com

### ABSTRACT

*Women equality with men is almost necessary in all aspect of life. Equal voting right in election represents country's initiative to establish equality among men and women in democracy. But the current scenario of policies has witnesses that a woman does not get equal opportunities like men to participate in political affairs. Numbers of constrain affect women participation in politics and decision making. Women constitute half of the world population, but they are the largest excluded category in almost all respects. Women are neglected at family, community and societal levels and living as an oppressed class. Historically they have been exposed to extreme form of physical, sexual and psychological violence and enjoy least socio -economic status. They have been victims of gender based violence and their miseries got intensified further due to patriarchal nature of society. Women attempted diversified strategies to liberate themselves from shackles of exploitation and feminism was a major response to challenge patriarchy at global platform as well as within national boundaries. An important area where women have been inadequately represented is in the political sphere. Articles 325 and 326 of the constitution of India guarantee political equality, equal right to participation in political activities and right to vote respectively. Lack of space for participation in political bodies has not only resulted in their presence in numbers in these decision making bodies but also in the neglect of issues and experiences in policy making.*

**KEYWORDS:** *Political Participation, Representation, Position of Women, Indian Politics, Women equality, Reservation, Women empowerment.*

## INTRODUCTION:

*“Woman is the companion of man, gifted with equal mental capacities. She has the right to participate in the minutest details in the activities of man, and she has an equal right of freedom and liberty with him”*

-----Mahatma Gandhi-----

All human beings are born free and equal in dignity and rights and that everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, sex, language, religion, birth or other status. But it is the most unfortunate that women have suffered inferior position to men in almost all societies of world. The status of women in the family and society at large was no better than those of slaves and had been treated like ordinary chattels-incapable of enjoying any rights as human beings. They were condemned to perpetual subjugation to their fathers, husbands and guardians.

Women's issues are of great importance in contemporary societies and culture. Although gender relations are concerned with both men and women at present gender studies are still mainly focused on women because they have been marginalised for so long. Throughout most of human history there has existed an asymmetry in relations of power between men and women. Thus there exists a major agenda to be addressed in order to overcome women's invisibility, marginalization and subordination. Gender has now become a critical category for analysis in all fields social, economic, religious, cultural and political. Many current issues in debates about women their status and role in a society. Politics and economy are influenced by historical, cultural and religious factors. Women constitute more or less half of the citizen of any country, yet they lack support for fundamental functions of a human life.

According to Indian's constitution, women are legal citizens of the country and have equal rights with men (Indian parliament) because of lack of acceptance from the male dominant society. Indian women suffer immensely. Women are responsible for bearing children, yet they are malnourished and in poor health. Women are also overworked in the fields and complete the all of domestic work. Most Indian women's are uneducated. Although the country's constitution says women have equal status to men, women are powerless and are mistreated inside and outside the home. In workplace they face greater obstacles including discrimination in hiring and sexual harassment in workplace. Gender equality in the realm of politics continues to be elusive even today. Even though they make up half of the adult.

Population and contribute more than their share to the society they are frequently excluded from the positions of power. They are underrepresented in the ranks of power policy and decision making. To participate in the political processes, women need to enjoy the full exercise of their civil and political rights democratic freedoms such as expression, media, opinion, peaceful assembly association and others are necessary vehicles for women's full political participation in countries where the freedom of expression is limited, women find themselves under constant surveillance and sometimes under threat by their own government. In countries where religion and culture impose social restrictions and impinge on state laws, women experience more difficulties in accessing education and engaging in public political space. The fulfilment of basic survival and social needs ,economic independence and freedom from family and community violence and crucial requirements in women's realization of their political potential The enfranchisement of women or in other words their admission in law and to equality in all rights

political ,economic ,civil and social. With the male citizen, is not a new question to the thinkers, nor to any one by whom the principles of popular government are felt as acknowledge.

In post independence India, large numbers of women's autonomous groups have sprung up challenging patriarchy and taking up a variety of issues such as violence against women greater share for women in political decision making etc both at the activist and academic level. India has a rich and vibrant women's movement but it has still a long way to go to achieve gender equality and gender justice.

Women's empowerment is still a debatable issue in India. She is still treated as a second class citizen and the reason besides are illiteracy, customs, traditions, poverty, ignorance, her own lack of interest in her own political empowerment leads to such government policies, which lack proper insight and direction. It is important for the empowerment of women that the women actively participate in the political process of nation.

### **LITERATURE REVIEW:**

Many researchers including Randall (1987), Matland and Taylor, (1997) Rule, (1981) explores various factors hinders women participation in politics such as lack of time for politics due to their domestic obligations, their lack of socialization for politics, their lower social capital and weaker asset base than men owing to discrimination in schools and in the market, their under representation in the jobs that favor political careers, their marginalization within male-dominated parties, their inability to overcome male and incumbent bias in certain types of electoral systems.

Research by Browne and Barret (1991) found a strong association between female education and socio-economic development at both the individual and societal level. Oduol (2008) found access to education and lack of quality education still remains a barrier for many women. That shows education ill-equips women for leadership.

Some of the researcher including Kellerman & Rhode (2007), Kiamba (2008) found gender stereotype was one of the important barriers for women leadership. That explained women face a 'double edged sword' ascribed to gender role stereotypes, as there is a long-standing and widespread belief that male traits are consistent with leadership. Kunovich, Paxton and Hughes (2007) explained that cultural ideas about women can affect women's levels of representation throughout the political process, from an individual woman's decision to enter politics, to party selection of candidates, to the decisions made by voters on Election Day.

Bari, (2005) in a study formulated and narrated some important factors which hinder the women political participation. Ideological factors, political factors, socio-cultural factors, economic factors are very important in this regards. Besides these lack of capital and strategy for women political participation are also in the same regard. Bano, (2009) conducted a study to observe the situation of women in Parliament in Pakistan. The focus of this research is on the role of Pakistani women in the political arena. The study observes how this numerical strength in parliament has contributed to the empowerment of women. The study concluded that in relative terms, the status of women has improved in contemporary society with the passage of time, but the ideal of women's empowerment is still a distant dream.

McCarthy and Sultana, (2004) conducted a study to explore the possible hindrance in the women political participation. Domestic violence and other forms of violence are flourishing in families, society and also in the state as a means of controlling women. Their subordinate social and legal

status and domination by men in the family, society and state obstruct their participation in public life. Hence the patriarchal mind-set is considered to be a key issue in limiting the women political participation. National Commission on the Status of Women (NCSW, 2010) in its report suggested that women are not much active despite coming into the field of politics. Although women are brought into political institutions, no effort is made to transform the patriarchal nature and culture of institutions. MoWA (2006) shows the number of elected women representatives is still low; More and more women are engaged in formal employment, but are underrepresented in middle and higher management positions; The number of women leaders and decision makers at the various level of the decentralized government structure is still very low.

### **OBJECTIVES OF THE STUDY:**

The aim of the study is to investigate into the dearth of law relating to political participation of women in the present scenario and then try to develop the concept of empowerment of women through the achievement of the following objectives:

1. To analyse equal access of women in the decision-making in order to participate in political and economic empowerment;
2. To help in removing deficiency in law in order to strengthen legal system aimed for elimination of all forms of discrimination against women;
3. To suggest measures for establishment of supporting platform for women by building alliances so that they achieve higher level of energy and commitment;
4. To know the role of women in the political arena and their political consciousness;
5. To examine the causes responsible for low level participation of women in Indian Politics;
6. To explore the constraints faced by women in performing their role in electoral politics; and
7. To find out the position of women in National Parliament.

### **Status of Women from time to time was as under:**

#### **1. Status of women during Vedic period**

The main sources of information on the earlier history of the Vedic period in India are the Vedas. The word 'Veda' means knowledge. So Veda provides knowledge on the basis of religious guidelines for smooth life. The Vedic period is divided into two stages:-

- a) Initial Vedic period 1500 to 1000 B.C. and
- b) Later Vedic period 1000 to 600 B.C.

#### **a) The status of women during early Vedic times:-**

In ancient times women got pleasure from higher status in all fields of life in the society. In the Vedic period, women held respectable position, equal status, duties and responsibilities with men within and outside homes. She was treated men friendly and co worker. She enjoyed the right to property, went to Gurukul to receive education, use to select the life partner by Swayamber, performed all religious ceremonies, widows remarriage was allowed if she liked. She struggled against the social as well as political evils like men. Throughout the Vedic literature, there is a mention of women who accomplished excellence in philosophy like Sarswati, kali, Durga and

Luxmi. Women were not bound by social restrictions. In Vedic time, daughter's birth in family was treated as equal to goddess of wealth and the son's birth was not considered absolutely necessary in all the social and economic activities. In this period, women had the full freedom to attend and make visit to social gathering as well as public places. Inter caste marriages were accepted in different communities. At that time, Sabha was an institution of elderly members of the tribe. The king's hierarchy was limited to Sabha and women took part in it. At that time, another Assembly Samiti, which discharged judicial and Political works and less powerful then Sabha.

#### **b) Status of women in later Vedic times:-**

Ramayana and Mahabharata may be the two great epics to show general degeneration in the freedom of women. They had to perform almost subordinate role to men. Women used to nurture and perform caretaking roles and their need for economic and social living and participation in political activities was neglected. The evils of child marriage, sati, prostitution, girls killing, prohibition of widow's remarriage, parda, restriction on divorce had started by now. Women's marriage which was started by Swayamvara had stopped. Marriages in the same Gotra were not accepted. Women were treated as inferior and totally dependent on men. Women were strictly banned from moving freely in society and taking part in political functions. With the emergence of fourfold classification, she was denied the right to property and education. The age of eight years was reasoned as the ideal age for girl's marriage. The mixing of non Aryans into the Aryans became the basic reason for the women non participation in the social political and religious life. The non Aryan girls were less educated and had not participated in the social customs of the Aryans. The society became patriarchal and the birth of boy was more welcome rather than the girl. Females stopped to participate in the discussions of the tribal council which was known as Sabha. Buddhism and Jainism had emerged as alternative for breaking down that type of radical society. But those evils took deep roots in the lives of common people. So, till the arrival of Muslims, the Hindu way of living was the guiding force for people in India.

#### **2. Status of women during medieval period:**

This period was spread over from A.D.1200 to A. D. 1700. It was dominated by the Muslim rulers. The parda system and percentage of literacy among women which went down rapidly had restarted. In this phase, the Sikh religion appeared as a synthesis and good link between Hindu and Islam religions. Bhakti movement became very popular during the medieval time which gave rise to a new class of males and females who cared shortly for gender bias. Bhakti movement and Satsanghs created opportunities for women to participate equally in some social activities without the hurdles of caste and creed. It was the Bhakti movement which involved women like Mira Bai. But unequal social structure was not challenged by Bhakti movement because it was limited only to individual salvation. First Sikh Guru, Nanak Dev Ji gave the message of gender equality. In spite of this women belonging to Sikh religion have similar problems. Nur Mahal and Chand Bibi were known as the great women at that time. During the Mughal rule, Hindu women were also under great depression. Parda system began to be popular among Hindu women also. Sati system became a lesser evil then capture. Due to rare participation of women in social, economic, political and religious life in that stage, women were divided into categories. Dev Dasis grew as elite group. In Mughal period, elite Muslims started forced marriages with Hindu girls by altering them to Islam. At that time early child marriage started for both Muslims as well as Hindus.



### **3. Status of women during British period:**

Until recently, the women history in India has been a very slow process but a progressive march towards modernity following a long history of struggle and decline. Indian reformists as well as British missionaries and critics of their own society hypothesized a 'Golden age'.

### **4. Status of women after Independence:**

In 1950, after independence, Indian constitution provided for the right to vote for all women who were above 18 years. In 1952, General Assembly of UNO adopted document of political rights for women. A Central social welfare board was created in 1953 during first five year plan which was given the responsibility of promoting and developing welfare services for women and children. Women welfare and development Bureau was organised in the year 1976 to coordinate and accelerate policies and programmes for the development of women. In 1957, the initiatives had begun for providing an opportunity to women in rural Panchayats by the Balwant Rai Mehta committee. This committee recommended induction of two women members of Panchayats for particular programmes of women and children. These two women members could be co-opted if they did not get themselves elected. Large number of women had entered in politics as co-opted rather than elected. These co-opted members were neither aware of their rights and responsibilities nor did they know much about the functioning of PRI's taking up problems regarding women and children. Thus, their involvement in decision making process has been meaningless. The nature of rural society was patriarchal and feudal so illiteracy and lack of access existed more in rural women rather than urban areas. Maharashtra became the first state who introduced the provision for the recommendation of one or two females to each of three local bodies according to Zila Parishad and Panchayati act of 1961. Later, a policy was introduced for reservation of 25 seats for females for gram Panchayats and Zila Parishads by Karnatka in 1983 and Andhra in 1986. The provision to reserve 20% to 30% of the total seats for female candidates in all tiers by the states of Maharashtra, Madhya Pradesh, West Bengal, Himachal Pradesh, Kerala, Orissa and Haryana. United Nations accepted the announcement about the elimination of discrimination against women in 1967. It desired that member's states should submit report on the position of women in their countries.

In spite of so many steps taken by UNO, central and state government's appointed committee report showed that it had a minor impact on the political process of women because inequality existed in their stature and political power. To make women's political rights more practical and give more chances for the formal politics, the committee recommended that political parties must set a quota system for female candidates. At the same time, as a transnational measure, it intended allotting a block of seats to females in the municipal councils. As a second step it advocated the establishment of women Panchayats at the local level, directly elected by rural women. These women Panchayats would have autonomy and possession of their own for the supervision and administration of women's and children welfare and development programmes. The committee also recommended the formation of permanent independent commission on women at both states and national levels, with the authority to collect information from the government agencies on the issues related to women, to evaluate programmes and laws that influenced women. To make sure that the recommendations would be followed, the committee laid down that the government would be legally bound to follow its recommendations. Twenty five years after the inspection by the International women year in 1975 on the women development, came a declaration that year 2001 would be women's empowerment year and the United Nations decade for women (1976-85) and the year of girl child be taken up.



In 1977, Ashok Mehta committee recommended for the reservation of seats for many poor sections and introduced the method 'co-opted by election' for women. It means that the participation of women in electoral process, two women representing the highest number of franchise among the women candidates in the election could take the seats reserved for them. In 1979, convention on the elimination of all forms of Discrimination (CEDAW) included some articles. Article VII, VIII and XIV directly deal with the status of women. Article VII gave the right to vote to women, to participate in framing and implementing government programmes and freely join public and political organisations. Article VIII dealt with the women representation at the international level and article XIV dealt with violence regarding rural areas against women and providing help to participate in villages and benefits from rural development. Hanumantha Rao committee in 1983 and G.V.K. Rao committee in 1985 also took initiatives for PRS. Under the chairmanship of L.M. Singhvi, a committee was appointed in 1987. This committee also recommended that females should be given a chance for participation at local level as not less than one third of the seats of chairpersons had been reserved for them. With this provision, women and other weaker sections were given equal chance in the national progress and development. The sixth five year plan (1980-85) incorporated a chapter on women as well as their development and stress for want of economic freedom of women with their health and family planning services. The seventh plan (1986-91) was related to empowerment of women through the international decade. According to plan policies promoting confidence among women, increasing awareness about their rights and privileges and training them for economic criteria. Later in 1986-87 Women Development Corporation was set up. The main theme of the corporation was to encourage plans and programmes for women and to give help to the weaker sections of women. After that the congress (I) and Janta Dal did fix a 30 percent quota in their election manifestos in 1989 but the recommendations were not implemented. Some weaknesses in existing local institutions were experienced and many suggestions were received from various quarters and government initiated for shifting the basic structure of functioning and making new constitutional provisions. The 64<sup>th</sup> amendment bill 1989 was introduced by Rajiv Gandhi government and which gave following recommendations:

1. Provision of 30% of seats reserved for females in different tiers of Panchayati raj institutions;
2. Reservation in the bureau of chairpersons in the Panchayats for SCs/STs and women; and
3. Thirty percent of the total number of seats is to be filled by direct election in all Panchayats which shall be reserved for women and chosen by citizens in different constituencies in panchayats.

In the decade of 1980 to 1990, several questions were raised regarding their inferior status. Many women movements emerged and the issue of 'women empowerment' came into notice. In the past two decades, the two major events relating women have been the establishment of the National commission for women in India (NCWI) and the constitutional amendment reserving 30% of seats for females in all elected local bodies. With this effort, large number of women assumed the status of leadership and decision making. Most of them became chairpersons at village, block and district levels taking important decisions which influenced millions of numbers. During the time of Narsimha Rao government, the 73<sup>rd</sup> and 74<sup>th</sup> amendment acts were passed in 1992, regularly under Article 243-D and 243-T provided for reservation of one third seats and posts of chairpersons of both rural and urban bodies for women in local level institutions.

The 73<sup>rd</sup> Amendment Act is a hallmark making changes of political power at the grassroots democracy in India. Decentralisation gives power to the local bodies to make active participation in local level decisions including social/political/economic etc. PRIs provide a chance to the rural people including women to participate themselves from lower level to achieve all the national challenges.

The 73<sup>rd</sup> amendment act came into force on 24 April 1993. PRIs implement the process of women empowerment from the village level. Through these channels, it can mould the social sphere of village. The PRI's give leadership charge to the women, as well as provide opportunity to them to take part in co-decision making, co-policy making and power sharing etc. PRIs generate healthy atmosphere to do activities for women, equal rights with men in village areas. They also help for preparing women for parliament and assemblies, political participation with 33 per cent reservation. The 73<sup>rd</sup> amendment enables PRI's to perform as a hope for good governance and deliver political space to the weaker sections of the society like SCs, STs and women. The 73<sup>rd</sup> Amendment gave statutory status to the Panchayats and made sure that members of rural level local government were directly elected by the common masses. The approach of this act was directly related to minimizing the old feeling of males about the small status of females in our society, particularly in the areas of custody of females, under the subjugation of males, putting limitations on them through households and society against them for using opportunities, many other social, cultural and traditional factors for improving their personality and conditions in existing social and economic surroundings.

PRIs which are better known by the other name of influential democratic decentralisation institutions, who give chances to the large majority of village people for participating in the development and democratic decision making process. These make the rural people actively conscious about the minds of spirit of self-help, self independence and experience in the art of rural government. However, the bill providing 33% for reservation in house of people and the state assemblies was not accepted in 1996. The next effort for this also failed in 1998. Act of 1996 made it mandatory provision in the Panchayati Raj Act tackling Gram Sabha meetings throughout the country on the Republic Day, Labour Day, Independence Day and Gandhi Jayanti occasions. The years from 1999-2000 were announced as the years of Gram Sabhas.

Government of India prepared a policy document of National Perspective Plans (NPP) for women in 1998-2000. Through this programme, those policies were implemented which made the system more responsive to women needs. Two main recommendations to secure effective participation of females in the decision making process at all levels were as under:

- a) Thirty percent seats reservation should be made in village Panchayat, zila parishad and local municipal bodies for women. Larger representation for Dalits, tribal women of weaker sections should be ensured; and
- b) Thirty percent reservation for women as executive heads of all bodies like village Panchayats, zila parishads and a few percentages reserved for chief executives of PRIs at lower, middle and higher levels.

Constitutional Amendments 84<sup>th</sup> and 85<sup>th</sup> will also propose 1/3 of total seats reserved for women in lok sabha and state assemblies including SC and ST Women. Equal participation of males and females in decision making process at all levels was the main agenda of the multi year programme from 2001 to 2006 under the commission on the status of women (CSW). In the years (2009-2010) during 15<sup>th</sup> Lok Sabha, a committee was organised for 'Empowerment of

women through Panchayati Raj Institutions. The main focus which came up for discussion including training and capacity building programmes, was necessary for elected representatives. The main agenda of the 59<sup>th</sup> session of the commission on the status of women was also better known by CSW59/Beijing+20(2015), during fourth world conference addressed changes for gaining gender equality and empowerment of women in the post 2015. The Punjab assembly passed bills amending provisions for reservation from 33% to 50% in PRIs and Municipal bodies in 2017. The Punjab PRIs amendment bill and Punjab Municipal bill were moved by the ministers Tript Rajinder Singh Bajwa and Navjot Singh Sidhu. This was also another step taken by the congress government towards empowering women during the tenure of present Chief minister Captain Amrinder Singh. The amendment will help empower women in rural areas by enhancing their reservation quota in the direct elections for Gram Panchayats, Panchayat Samitis and Zila Parishads as well as Municipals Corporations and Nagar Panchayats. Representation for women in the offices of Sarpanches of Gram Panchayats, chairpersons of Panchayats Samitis and Zila Parishads as well as Mayors of Municipals corporations and Nagar Panchayats.

### **Political Participation by Women:**

In liberal democratic political systems, participation of more and more people is considered as essential because people's participation is the crux of democratic system. In democracy all citizens of country participate in the formation of government because democracy guarantees equal rights to both males and females. Democracy opens up equal scope for participation of women in the political process. It is written in our constitution that citizens of India will voluntarily contribute towards their own development. The word 'citizen' is used for both, men and women. Democratic decentralisation would be rendered meaningless if gender equality is not ensured. The scope of development in any civil society would be slow if women who constitute about 50 per cent of the population are left out of the development process. In spite of the largest democracy in the world, the position of women in Indian society is not so strong. It is better known as the modern face with traditional soul. A famous concept of democracy given by Abraham Lincoln is "government of the people, by the people, for the people" failed in the world particularly in the context of half the population in any country being the females. So if we are serious about the successful running of any political system, the participation of women should be ensured in political process. But, first of all we should understand the concept of participation.

### **Evolution of Women's Participation in Political Activities:**

The roots of the women's participation in politics can be traced back to the nineteenth century reform movement. This movement emerged as a result of conflict between the Indian bourgeoisies, trying to wrest control from the British. This class made attempts to reform it, mainly by campaigning against caste, polytheism, idolatry, animism, purdha, child marriage and sati etc. Male social reformers who took up issues concerning women and started women's organization from the end of nineteenth century, first at the local and then at the national level. In the years before independence the two main issues they took up were political rights and reform of personal laws. Women's participation in the freedom struggle broadened the base of women's empowerment. It is important for the empowerment of women that the women actively participate in the political process of the nation.

Women's are the world's largest excluded group in political arena. 21.9 % of the members of national parliament worldwide are women. Women hold 16.0 % of the seats in Arab state

parliaments and 21.8 % of the seats in Sub-Saharan African nation's parliament. In Americas women hold 26.6 % .On the other hand in the developed nations of USA, France and Japan 18.3 %, 26.2 %, 8.1 % respectively of the House of Representatives of Lower House of parliament are comprised of women. In Palestine 13.0 % of the Legislative Council members are women and in Morocco women make up a mere of 17.0 % of Parliament. In India women comprised 11.4 % of National Parliament.

One of the biggest setbacks that the women of the state have faced in last few years related to the provisions of the 73rd and 74th amendment of Indian constitution. These amendments related to the panchayat raj institutions (PRI's) have brought about a silent revolution by the provisions related to 33 % reservation for women in the institutions of local self government. They have brought a drastic transformation in India as far as participation of women at the gross root level politics is concerned. As per an estimate there are nearly 7 Lakh women Panch and Sarpanchs and the Chairpersons of Panchayat.

The twentieth century has been a worldwide revolution in the extension of political rights to women. Less than ninety years ago there was no major country in the world where women are guaranteed the right to participation in politics on an equal basis with men. Today only a handful states, most of them little populated Arab nations, legally bar women's participation in political life. In several major waves of change in this century, the ideal of the political equality for women has spread from those states where it originated to the rest of the world and has been translated in to legal guarantees.

#### **Women in the Lok Sabha and Rajya Sabha:**

The 16th Lok Sabha in India (2014) comprised 62 women members only 11.41 % of the total Lok Sabha membership. While it has increased from 9.02% in 1999, it is almost half of the world average of 22.2%. The Rajya Sabha does not fare much better, with 29 women members comprising 11.9% of the total membership in 2014. Again ,while this is an improvement from the 1999 figure of 7.70% it is far below the world average of 19.6% it comes as no surprise then that India is ranked 141 in the world rankings of women in national parliaments ,compiled by the inter - parliamentary union. India's rank is one of the lowest in the region and falls below her neighbours, Nepal ranked at 40, Afghanistan at 45, China at 71, Pakistan 86.

#### **Women in Panchayat Raj Institution:**

Women in India are much better represented in the panchayat raj institutions as compared to the parliament. As per the Ministry of Panchayat Raj, in 2008 the Gram Panchayat had 37.8% women members ,the Intermediate Panchayats 37 % women members .The total representation of women in all three tiers of the Panchayat amounted to 36.87 % . This seems to be a result of Article 243 D of the Indian constitution, mandating at least 1/3rd of the seats in all tiers of the Panchayat. A further amendment to the Article was proposed in 2009 ,increasing to 50 % but was not passed .some states such as Bihar have 50 % reservation for women in the Panchayat Raj as per the state Legislation ,but not all the states in India have adopted similar legislations.

#### **Position of Women in National Parliament:**

Women have, however, not found adequate representation in the Lok Sabha. The percentage of elected women Lok Sabha members has never exceeded 12 per cent. Table 1 shows representation of women in Lok Sabha since 1952. Average number of women representation in

Lok Sabha works out to only 36.87 and average percentage of women representation in Lok Sabha is not more than 6.91 per cent.

**TABLE 1 POSITION OF WOMEN IN LOK SABHA**

| Year | Seats held by women | % of female members | Year | Seats held by women | % of female members |
|------|---------------------|---------------------|------|---------------------|---------------------|
| 1952 | 22                  | 4.41                | 1989 | 27                  | 5.22                |
| 1957 | 27                  | 5.50                | 1991 | 39                  | 7.17                |
| 1962 | 34                  | 6.76                | 1996 | 39                  | 7.18                |
| 1967 | 31                  | 5.93                | 1998 | 43                  | 7.92                |
| 1971 | 22                  | 4.22                | 1999 | 49                  | 9.02                |
| 1977 | 19                  | 3.49                | 2004 | 45                  | 8.28                |
| 1980 | 28                  | 5.15                | 2009 | 58                  | 10.68               |
| 1984 | 44                  | 8.09                | 2014 | 62                  | 11.41               |

**Average: 36.87                      6.91%**

*Source: Election Commission of India.*

The presence of women in the Upper House has been only slightly higher overall, probably due to indirect elections and nomination of some women members. It was highest in 1990 at 15.5 per cent and shows a declining trend thereafter. Nonetheless, this representation does not even come close to the 33 per cent marks (Table 2). It is significant to note that the Deputy Chairperson of the Rajya Sabha at least for more than 25 years has been a woman, yet women face increasing competition from male politicians for nomination.

**TABLE 2 POSITIONS OF WOMEN IN RAJYA SABHA**

| Year | Seats held by women | % of female members | Year | Seats held by women | % of female members |
|------|---------------------|---------------------|------|---------------------|---------------------|
| 1952 | 15                  | 6.94                | 1984 | 24                  | 10.24               |
| 1954 | 16                  | 7.3                 | 1986 | 28                  | 11.98               |
| 1956 | 20                  | 8.6                 | 1988 | 25                  | 10.59               |
| 1958 | 22                  | 9.5                 | 1990 | 24                  | 10.34               |
| 1960 | 24                  | 10.2                | 1992 | 17                  | 7.29                |
| 1962 | 17                  | 7.6                 | 1994 | 20                  | 8.36                |
| 1964 | 21                  | 8.8                 | 1996 | 19                  | 7.81                |
| 1966 | 23                  | 9.6                 | 1998 | 19                  | 7.75                |
| 1968 | 22                  | 9.2                 | 2000 | 22                  | 9.01                |
| 1970 | 14                  | 5.8                 | 2002 | 25                  | 10.20               |
| 1972 | 18                  | 7.4                 | 2004 | 28                  | 11.43               |
| 1974 | 17                  | 7.0                 | 2006 | 25                  | 10.41               |
| 1978 | 25                  | 10.2                | 2010 | 27                  | 11.11               |
| 1980 | 29                  | 11.9                | 2012 | 28                  | 11.43               |
| 1982 | 24                  | 9.8                 | 2014 | 29                  | 11.9                |

**Average: 22.92                      9.62%**

*Source: Election Commission of India.*



The number of women contesting election has always been low, as may be seen from Table 3. The highest number of women contestants has been merely 636 in 2014, while the number of male contestants has always been in thousand, the highest being 13,353 in 1996. Yet it is encouraging to note that the percentage of winners among women has consistently been more than that of the men, notwithstanding the fact that more often than not, the losing seats are offered to women candidates by the respective political parties. For example, in 1996, only 3.8 per cent of male candidates won, in comparison to 6.7 per cent of female candidates. Likewise, the percentage of winners was 11.2 per cent for men and 15.7 per cent for women in 1998, 12.3 per cent and 17.3 per cent in 1999, 6.44 per cent and 10.61 per cent in 2009 and 6.39 per cent and 9.74 per cent, respectively in 2014 (16th Lok Sabha).

This scenario is also typical at the state level. There are only a few instances of women holding portfolios of finance, industry, etc., and are mainly relegated to what are considered 'women specific' departments. The source reveals that the highest percentage of women in the State Legislative Assemblies has been 10.8 per cent in 1957 in Madhya Pradesh. Haryana has the highest average of women in the Assembly at 6.1 per cent and Manipur, the lowest at 0.3 per cent. The period average varies between a mere two per cent and six per cent. Significantly, there seems to be slight or no correlation between literacy and female representation. Kerala, with its high literacy rate, has a low state average of 3.6 per cent. Even Rajasthan and Bihar have higher averages at 4.7 per cent and 4.5 per cent respectively.

**TABLE 3 WOMEN CONTESTANTS**

| <i>Year</i> | <i>Males</i> | <i>Females</i> | <i>Total</i> | <i>Percentage of males winning</i> | <i>Percentage of females winning</i> |
|-------------|--------------|----------------|--------------|------------------------------------|--------------------------------------|
| 1952        | 1831         | 43             | 1874         | 26.05                              | 51.16                                |
| 1957        | 1473         | 45             | 1518         | 31.7                               | 60.00                                |
| 1962        | 1915         | 70             | 1985         | 24.0                               | 50.00                                |
| 1967        | 2302         | 67             | 2369         | 21.3                               | 44.80                                |
| 1971        | 2698         | 86             | 2784         | 18.5                               | 24.40                                |
| 1977        | 2369         | 70             | 2439         | 22.1                               | 27.10                                |
| 1980        | 4478         | 142            | 4620         | 11.5                               | 19.7                                 |
| 1984        | 5406         | 164            | 5574         | 9.2                                | 25.60                                |
| 1989        | 5962         | 198            | 6160         | 8.5                                | 13.60                                |
| 1991        | 8374         | 325            | 8699         | 5.9                                | 12.00                                |
| 1996        | 13353        | 599            | 13952        | 3.8                                | 6.70                                 |
| 1998        | 4476         | 274            | 4750         | 11.2                               | 15.70                                |
| 1999        | 3976         | 278            | 4254         | 12.3                               | 17.30                                |
| 2004        | 5080         | 355            | 5435         | 9.8                                | 12.30                                |
| 2009        | 2514         | 556            | 8070         | 6.44                               | 10.61                                |
| 2014        | 7527         | 636            | 8163         | 6.39                               | 9.74                                 |

*Source: Election Commission of India.*



The representation of women in the Union Council of Ministers between 1985 and 2014 is shown in the Table 4. The data show that women have remained poorly represented in Council of Ministers.

**TABLE 4 REPRESENTATIONS OF WOMEN IN THE UNION COUNCIL OF MINISTER (1985-2014)**

| <i>Year</i> | <i>Number of Minister</i> |                 |                 | <i>Number of Women Minister</i> |                 |                 |
|-------------|---------------------------|-----------------|-----------------|---------------------------------|-----------------|-----------------|
|             | <i>Cabinet</i>            | <i>Minister</i> | <i>Deputy</i>   | <i>Cabinet</i>                  | <i>Minister</i> | <i>Deputy</i>   |
|             | <i>Minister</i>           | <i>of State</i> | <i>Minister</i> | <i>Minister</i>                 | <i>of State</i> | <i>Minister</i> |
| 1985        | 15                        | 25              | 0               | 1                               | 3               | 0               |
| 1990        | 17                        | 17              | 5               | 0                               | 1               | 1               |
| 1995        | 12                        | 37              | 3               | 1                               | 4               | 1               |
| 1996        | 18                        | 21              | 0               | 0                               | 1               | 0               |
| 1997        | 20                        | 24              | 0               | 0                               | 5               | 0               |
| 1998        | 21                        | 21              | 0               | 0                               | 3               | 0               |
| 2001        | 30                        | 7               | 35              | 3                               | 2               | 4               |
| 2002        | 31                        | 45              | 0               | 2                               | 5               | 0               |
| 2004        | 28                        | 38              | 0               | 1                               | 6               | 0               |
| 2009        | 34                        | 45              | 0               | 3                               | 5               | 0               |
| 2014*       | 23                        | 23              | 0               | 6                               | 1               | 0               |

\*First phase of Narendra Modi's Council of Ministers which took oath on May 26, 2014.

Since Independence we had so far 15 women chief ministers and 23 women governors. Only one woman so far served as President of India but so far we had no woman as Vice-President and Chief Justice of India. Only one woman has got the opportunity to serve as Chief Election Commissioner and one as Chairperson UPSC but none as CAG. Women employment under Central Government has been found to the extent of 3.11 lakh, which is only 10.04 per cent of the total regular Central Government employment (as on 31st March, 2009). The number of women candidates recommended for appointment on the basis of the results of the Civil Services Examination, 2007 was 143 as against 101 in the year 2006. However, since 2010 the representation of women through Civil Services Examination for the higher civil services is gradually increasing. Out of 269,036 candidates appeared in the Civil Services (Pre) Examination held on May 23, 2010, 204,716 were male and 64,320 were female. On the basis of the result of this examination 11036 male and 1453 female were declared qualified for taking the main examination. Finally, after the main examination 718 male and 203 female candidates (22.04%) were recommended for 2010 higher civil services posts including IAS and IPS. The trend is positive and in 2011 Civil Services Examination after the main examination 787 male and 212 female candidates (21.22%) were recommended for 2011 higher civil services posts

including IAS and IPS.<sup>10</sup> The number of women candidates appeared, interviewed and recommended during 2010 and 2011 are at Table 5.

**TABLE 5**

| <i>Examination</i>                      | <i>Appeared</i> | <i>Interviewed</i> | <i>Recommended</i> |
|---|-----------------|--------------------|--------------------|
| Civil Services (Main) Examination, 2010 | 1418            | 449                | 203                |
| Civil Services (Main) Examination, 2011 | 1453            | 433                | 212                |

The representation of women at various levels in services, representative bodies and judiciary remain grossly inadequate even after 65 years of the working of the Constitution. Lack of adequate participation of women is not only depriving them of their due share in income but also of the social benefits that come from women's enhanced status and independence (including the reduction of mortality and fertility rates).

### **Reservation of Women in Parliament and State Legislatures:**

Taking this whole question to its logical conclusion, the demand gathered momentum and the question of quotas came up again in 1995. This time the focus was on women in Parliament. Initially, most political parties agreed to introduce 33 per cent reservation for women in Parliament and State Legislatures and in order to attract women voters, the 1996 election manifestoes of almost all the political parties echoed this demand. But soon doubts surfaced. When the Bill addressing this issue was introduced in the Eleventh Lok Sabha in 1997, several parties and groups raised objections. The objections focused around two main issues: first, the issue of overlapping quotas for women in general and those for women of the lower castes; second, the issue of elitism. The Bill was first introduced by Dev Gowda led United Front Government. But persistent demands for a sub-quota for another backward classes and minorities resulted in its being referred to a Parliamentary Committee headed by Gita Mukherjee, which recommended its passage, rejecting the demand for sub-quotas, despite differences among members on the various issues involved. The demand for sub-quotas for OBCs and minorities is seen, again to be merely a way of stalling reservation for women; there are no instances of political parties having such quotas in their own cadres. The Bill has already been introduced five times, but is stalled each time. The ugly scenes witnessed in Parliament at the time seem to indicate a devaluation of the agenda of women's empowerment. Sex as the basis of reservations and the electoral strategies perceived to be behind the Bill, continues to be a contentious issue even among those strongly committed to the cause of women's empowerment.

However, the Rajya Sabha on March 9, 2010, took a 'historic and giant step' by voting (191 for and 1 against) to amend the Constitution, providing one-third reservation in Parliament and State Assemblies for women. Till today bill is not passed by the Lok Sabha and ratified by one-half of the states before it comes into effect.

Assuming that the Women's Reservation Bill gets signed into law, how will it work on the ground? If women gain control of one-third of the seats in the Lok Sabha and the State Legislative Assemblies, what will be its effect on their male counterparts? How will rotation of seats work in practice? Who decides which seat go to women?

First, the key features of the Bill: one-third of all seats on the Lok Sabha and the State Assemblies will be reserved for women. In the case of the Scheduled Castes and Scheduled Tribes, the reservation will work as a quota within quota one-third of the seats currently reserved for the two categories will be sub reserved for SC / ST women. Reservation of seats for women will be in rotation and will cease 15 years after the commencement of the Act. Seat allocation will be done in a manner determined by Parliament through enactment of a law.

Now the implications of the legislation: Since one-third of the seats will be reserved during each general election, each seat in the Lok Sabha and each seat in each of the Assembly will have one reserved and two free terms in the course of three elections. In a 15-year time limit, this will translate as each seat getting reserved for women just once – provided, of course, that governments complete their terms and elections are held once every five years. If there are six instead of three elections in this period, each seat will get reserved twice, after 15 years, each seat will have been reserved at least once, the idea being that women representatives should have reach and spread across the country.

### **CONCLUSION AND SUGGESTIONS:**

It can be conclusively stated that there has been a radical change in the movement for empowerment of women. Recognition is dawning that women are indeed becoming a political force, both nationally and internationally. In this context it would be noteworthy to recall the observations of Nobel Laureate Amartya Sen in his book, “India : Economic Development and Social Opportunity”, “Women’s empowerment can positively influence the lives not only of women themselves but also of men, and of course, those of children”.

Political parties cannot remain indifferent towards women who constitute 586.5 million population and nearly 48.46 per cent of the electorate (2011 Census). Although almost all parties have attempted to build women organisations to secure their support and make their organisations more broad-based, but in practice they have fielded much less proportion of women candidates in the elections giving them proportionately much less representation in the legislative bodies than their actual population strength.

Former CEC M.S. Gill’s proposal to make it mandatory for all political parties to nominate at least one third of women candidates for the seats deserves to be commended. If they are not prepared to accept the principle of representation within their own parties, what moral right do they have to advocate reserving parliamentary constituencies for women.

Admittedly, there is need to remove the dearth of laws (Constitutional provisions) and policies guaranteeing a place of honors and equality to women because they are not enough to combat the menace of inequality. For the emancipation of women and conversion of their de-jure equality into de-facto equality, the educational, economic and political independence of the women is of paramount importance. This can lead to total development of the women. This goal of economic independence and empowerment of the women can be achieved only through gainful employment opportunities. Women’s gainful employment especially in more rewarding occupations clearly will play a role in improving the lot of the women especially in increasing their status and standing in the society. The economic empowerment automatically follows political empowerment so it is quite clear that the socioeconomic condition of women will improve only if they are also a part of the governing process is a fact that is widely accepted the world over. Therefore, it becomes obligatory for the women’s organizations as well as the Government of India to search for remedial measures to improve the political status of the

women. The bill proposing quota for women is a step forward in mainstreaming women in politics by giving them representation in the highest elected bodies both at national and regional levels where they can discuss all the problems in order to seek their redressal and thereby to get an opportunity to highlight them on a national as well as regional platform. Without proper representation of women in the legislative bodies and political participation at all levels, issues concerning women would remain neglected. Realising women's subjugation and subordination and affirmative discrimination against women in general has emerged the need of their empowerment – both political and economic. In order to achieve this objective, Reservation Law for providing political participation to women is the need of the hour. Therefore, the individuals who oppose the Bill tooth and nail should be made to arrive at a consensus in the interest of the nation. The Government must be gutsy enough to ensure the Bill is passed even if it is at the cost of losing its allies because only a nation which has empowered its women to be a part of all forms of governance, can achieve true liberation and economic success. In India, this can come about only by enacting the Women's Political Reservation Bill.

Further **suggestions** which can be recommended are as follows:

- 1) To enforce stringent measures to stop corruption, criminalization and communalization of politics.
- 2) To ensure that women are taken seriously in their elected post by allotting important portfolios and limiting their functions to social welfare and women and child development.
- 3) To enforce stringent ceiling of funding expenses incurred for election campaigns.
- 4) Legal system aiming at elimination of all forms of discrimination against women should be strengthened. In addition to that, awareness level about laws should also be raised among women.
- 5) Women should be provided leadership and communication training.
- 6) The Representation of People Act, 1951 should be amended to compel political parties to provide for mandatory nomination of the women candidates for at least one-third of the seats to avoid de-recognition as a national party.
- 7) All the women organizations should come on a common platform with single target of pressing the political parties to either support the passing of Reservation Bill or face the anger of women voters in the next general elections because a critical mass of women is a pre-requisite for the effective political participation of women.
- 8) The media both print as well as electronic can play an important role in creating awareness in the society. It can act as an agent of political socialization for inculcating the values of gender equality and gender justice. At the end, it would not be out of place here to quote Robert Ingersoll, "There will never be generation of great men until there has been a generation of free women of free mothers".

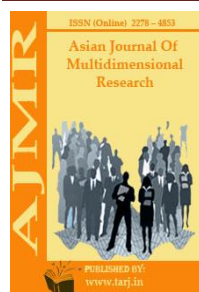
#### **REFERENCES:**

1. Annual Report, 2011-12, Ministry of Panchayati Raj, Government of India.
2. B. L. Fadia, Indian Government and Politics, Sahitya Bhawan Publications, Agra, 2011.
3. D.N. Jha, Ancient India in Historical Outline, Revised and Enlarged, Manohar Publication & Distributors, New Delhi, 2012.

4. Geeta and Sanjay Mishra, Panchayati Raj Institutions in India: Prospects And Retrospections, IOSR Journal of Humanities And Social Science (IOSR-JHSS), Volume 21, Issue 3, Ver. III (Mar. 2016).
5. G.S.Mehta, Participation of women in Panchayati Raj System, Kanishka Publisher Distributors, New Delhi, 2002.
6. Geraldine Forbes, The New Cambridge History of India-Women in Modern India, Cambridge University Press, Delhi, 1996.
7. Hajira Kumar and Jaimon Verghese, Women Empowerment Issues, Challenges and Strategies, Regeny Publication, New Delhi.
8. H.C.Upadhyay, Status of Women in India, volume I, Anmol Publication, New Delhi, 1991.
9. Kalpna Roy, Women in Indian Politics, Rawat Publications, New Delhi, 1999.
10. National Commission to Review the Working of the Constitution, A Consultation Paper on "Pace of Socio-Economic Change under the Constitution.", pp. 33-35, May 2001.
11. Niroj Sinha, Women in Indian Politics, Gyan Publishing House, New Delhi, 2000.
12. National Commission on the Status of Women (NCSW), Study on local bodies system and its impact on women. Pakistan: NCSW. 2010a.
13. Pawan Kumar, Participation of Women in Panchayati Raj Institutions in Himachal Pradesh, Gurukul International Multidisciplinary Research Journal (GIMRJ), Issue-III, Volume-VI, Oct.2016.
14. Ramesh K.Arora and Meenakshi Hooja, Panchayati Raj Participation and Decentralisation, Rawat,Publications Jaipur, 2009.
15. Sonia Bathla, Women Democracy and the Media, Sage Publication, New Delhi, 1998.
16. S.L.Goel and Shalini Rajneesh, Panchayati Raj in India: Theory and Practice, Deep & Deep Publication, Rajouri Garden, New Delhi, 2009.
17. Sharma, Neena, Political Socialisation and its Impact on Attitudinal Change Towards Social and Political System, Inter India Publication, New Delhi, 1985.
18. Shashi Kaul and Shradha Sahni, Study on the Participation of Women in Panchayati Raj Institutions, Stud Home Comm. Sci, 3 (1):29-38(2009).
19. Shakuntla Gupta, Women Development in India (A Comparative Study), Anmol Publications, New Delhi, 2005.
20. Sarojini Vats, Women Participation in Rural Development, Abhijeet Publications, Delhi, 2004.
21. Shahin Razi, Empowered Women, Empowered Nation, Yojana, June 2012.
22. The Union Service Public Commission, 62nd Annual Report 2011-12, Appendix-14.
23. V. S. Gupta, "Nation Building and Empowerment of Women", Employment News, 11-17 August, 2001.

24. Vikas Nandal, Participation of Women in Panchayati Raj Institutions: A Sociological Study of Haryana, India, International Research Journal of Social Sciences, vol.2 (12), 47-December, 2013.





## ROLE OF HEALTHCARE SECTOR IN GROWTH OF MEDICAL TOURISM IN INDIA

**Parneet Kaur\***

\*Research Scholar,  
University School of Applied Management,  
Punjabi University, Patiala, Punjab, INDIA.  
Email id: gillparneet690@gmail.com

---

### ABSTRACT

*Medical tourism takes place when individuals opt to travel overseas with the primary intention of receiving medical treatments. India is emerging as a prime destination for health and contributing a lot towards the socio-economical development of the society by enhancing employment opportunities and an increase in foreign exchange earnings. The present study is highlights the role of healthcare sector in growth of medical tourism in India. The findings of the study reveal that there is a positive relationship between the growth of healthcare sector and growth of medical tourism in India. The study suggests that the healthcare sector of India should be further improved in order to increase medical tourism in India.*

**KEYWORDS:** *Medical Tourism, Infrastructure, Human resources, Healthcare.*

## I. INTRODUCTION

Medical tourism is the idea of travelling for the purposes of obtaining health care or wellness services. People in less-developed nations may travel to the West for a highly specialized procedure they cannot find at home, or residents of the United States or Europe may travel to a less-developed country to take advantage of lower-cost medical services. People can travel to save money on necessary surgeries (such as open-heart surgery) that are much cheaper abroad, or on elective procedures (such as cosmetic surgery or dental implants) that are not covered by medical insurance (Stolley and Watson, 2012). What really puts “tourism” in medical tourism is what often happens after the medical procedures. Medical tourists can take advantage of their visit overseas by sightseeing, or by participating in other traditional tourism activities in the country they are visiting. Unlike other forms of tourism, in which travellers first choose a destination that appeals to them and plan out their activities, in the case of medical tourism the availability of a particular medical treatment determines the destination, and the vacation revolves around the medical care.

India is appearing as a major medical tourism market player primarily due to two push and pull factors. Firstly, India can provide high quality care at very low cost and secondly, the cost of medical care is touching prohibitive levels in the developed countries especially in the US, Britain, etc. Thus, cost effectiveness or comparative advantage in the production of medical care is cited as the catchword for attracting both foreign and non-resident Indian patients to India. The country can provide world-class medical care at a fraction of the cost incurred in the developed countries due to the availability of relatively cheaper but quality manpower, low-priced drugs, and other infrastructure (Godwin, 2004), the slogan being ‘First World treatment at Third World prices’. The Indian hospitals have highly qualified and highly experienced doctors and staff who provide high quality medical care to the patients. Presently, there are 25 JCI and 317 NABH accredited hospitals in India. Joint Commission International (JCI) is the most well-known accreditation institution which accredits American hospitals, and National Accreditation Board for Hospitals and Healthcare Providers (NABH) has been set up by the Ministry of Health and Family Welfare of India. Various specific tour packages available to medical tourists in India:

1. Bone marrow transplant
2. Brain surgery
3. Cancer procedures and cardiac care
4. Cosmetic surgery
5. Health checkups
6. Joint replacement surgery
7. Hip, knee replacement surgeries and other orthopaedic surgeries.
8. Heart surgery packages like cardiac surgery and cardiology, open heart surgery, angiographies, and angioplasties.

## II. REVIEW OF LITERATURE

Laing and Weiler (2007) identified that a number of factors have influenced the growth of medical tourism, including the high cost of medical procedures, long waiting lists, and ageing population in ‘rich world’ countries, greater affordability of flights and travel, and a shift in medical care away from the public sector, such that people are more comfortable with paying for medical services offered by private bodies or companies. Lee (2010) analysed the role of the health care sector in international tourism and the impact of international tourism on the state of

health care in Singapore and found that the development of health care sector has positive effects on international tourism in the long- run. **Connell (2011)** described Medical Tourism as simply where and when patients travel overseas often over considerable distances, to take advantage of medical treatments which are not available or easily accessible (in terms of costs and waiting time) at home. **Stolley and Watson(2012)** expounded that medical tourism is the idea of travelling for the purposes of obtaining health care or wellness services to save money on necessary surgeries (such as open-heart surgery) that are much cheaper abroad, or on elective procedures (such as cosmetic surgery or dental implants) that are not covered by medical insurance. **Carruth and Carruth (2010)** identified that low costs of medical treatments is the primary reason due which individuals from highly industrialised nations seek medical services in less developed countries. The study found that in those countries where the government controls access to health care services, some individuals choose outsourcing of medical care to circumvent delays associated with long waiting lists. **Lee et al. (2000)** affirmed that it is crucial to have a better understanding of service quality perceptions possessed by both recipients and providers when shaping the health-care delivery system. For the success of health-care organizations, accurate measurement of health-care service quality is as important as understanding the nature of the service delivery system. The study maintained that health-care recipients have difficulty in evaluating medical competence and the security dimensions considered to be the primary determinant of service quality, and thus, may not have as much to contribute to the design of an effective health-care system as providers have. **Rad et al. (2010)** maintained that how patients view the services which they have received, will ultimately affect their perception of the overall healthcare institution and the host country where they got treated. The authors further stated that a patient's overview and perspective of perceived service in healthcare centres plays a great role in the improvement level of service quality. The authors investigated the influence of healthcare service quality on medical tourists' satisfaction that come to Malaysia as international patients. **Indian Institute of Tourism and Travel Management (IITM) (2011)** studied the problems and challenges faced by medical tourists visiting India. A structured questionnaire was carried out in 17 cities in India and included 14 JCI accredited, 27 NABH accredited and 46 hospitals who had applied for NABH accreditation. The study found that there was a significant gap in expectations and experience of the customers at the pre-procedure stage, the cost of treatment being the largest gap. The study suggested that the general infrastructure of the country should be improved and there is a need for training of non-medical staff for cross-cultural sensitivities including language skills for the targeted source markets.

### III. OBJECTIVES OF THE STUDY

The study aims to achieve the following objectives:

1. To examine the growth of healthcare sector in India.
2. To analyse the role of healthcare sector in growth of medical tourism in India.

### IV. RESEARCH METHODOLOGY

The present study attempts to highlight the growth of human resources and infrastructure in healthcare sector of India. The study also attempts to analyse the impact of healthcare sector on growth of medical tourism of India. For the purpose of achieving the objectives of the study, secondary data has been used. The data is taken for the period of 2009-2013. To examine the growth of healthcare sector, variables such as growth in number of doctors, nurses, hospitals, medical colleges in India have been taken. The data for the same have been extracted from the

National Health Profile of India 2009, 2010, 2011, 2012, 2013, Central Bureau of Health Intelligence, and Government of India. For analysing the growth of medical tourism in India, variables such as total foreign tourist arrivals and number of medical tourists have been taken. The data have been extracted from India Tourism Statistics, 2013, Ministry of Tourism, Government of India.

## V. RESULTS AND DISCUSSIONS

### A. Growth of human resources in healthcare sector of India:

For examining the growth of healthcare sector, growth of human resources in healthcare sector of India and growth of infrastructure in healthcare sector of India have been analysed. For the purpose of ascertaining the growth of human resources, increase/decrease in the number of allopathic doctors, dental surgeons, and nurses and their percentage growth has been calculated from the year 2009 to 2013 as shown in table 1.

**TABLE 1. GROWTH OF HUMAN RESOURCES IN HEALTHCARE SECTOR OF INDIA**

| Year | Allopathic Doctors | Growth (%) | Dental Surgeons | Growth (%) | Nurses  | Growth (%) |
|------|--------------------|------------|-----------------|------------|---------|------------|
| 2009 | 32276              | -----      | 104603          | -----      | 1652161 | -----      |
| 2010 | 33301              | 3.17       | 114047          | 9.03       | 1702555 | 3.05       |
| 2011 | 33321              | 0.06       | 118370          | 3.79       | 1894968 | 11.30      |
| 2012 | 30097              | -9.67      | 120897          | 2.13       | 2124667 | 12.12      |
| 2013 | 37085              | 23.22      | 147159          | 21.72      | 2344241 | 10.33      |

Source: National Health Profile 2009,2010,2011,2012,2013,Central Bureau of Health Intelligence

The results depict that growth in allopathic doctors is 3.17% in the 2010, 0.06% in 2011. The growth was negative during the year 2012, but it showed enormous increase in the 2013, i.e., 23.22%. The rate of growth in the dental surgeons was also the highest in the year 2013. The number of nurses grew at the rate of 3.05% in the year 2010, followed by 11.30% in 2011, 12.12% and 10.33% in 2013.

| Average growth in allopathic doctors | Average growth in dental Surgeons | Average growth in nurses |
|--------------------------------------|-----------------------------------|--------------------------|
| 4.195                                | 9.167                             | 9.2                      |

### B. Growth of infrastructure in healthcare sector of India

For analysing the growth of infrastructure in healthcare sector of India, growth in the numbers of medical colleges, dental colleges, number of government hospitals and number of beds in hospitals for the period 2009-2013 has been examined as shown in table 2.

**TABLE 2. GROWTH OF INFRASTRUCTURE IN HEALTHCARE SECTOR OF INDIA**

| Year | Medical Colleges | Growth (%) | Dental Colleges | Growth (%) | Government Hospitals |            |                      |            |
|------|------------------|------------|-----------------|------------|----------------------|------------|----------------------|------------|
|      |                  |            |                 |            | No.of hospitals      | Growth (%) | No.of Hospitals beds | Growth (%) |
| 2009 | 289              | -----      | 282             | -----      | 11613                | -----      | 540328               | -----      |
| 2010 | 300              | 3.80       | 290             | 2.83       | 12760                | 9.87       | 576793               | 6.75       |

|      |     |       |     |       |       |        |        |        |
|------|-----|-------|-----|-------|-------|--------|--------|--------|
| 2011 | 314 | 4.67  | 289 | -0.34 | 11993 | -6.01  | 784940 | 36.08  |
| 2012 | 356 | 13.37 | 291 | 0.69  | 23916 | 99.41  | 622628 | -20.68 |
| 2013 | 381 | 7.02  | 297 | 2.06  | 19817 | -17.14 | 628708 | 0.97   |

Source: National Health Profile 2009,2010,2011,2012,2013, Central Bureau of Health Intelligence

|   |  |  |  |
|---|--|--|--|
| <b>Average growth in Medical colleges (%)</b> | <b>Average growth in Dental (%) Colleges (%)</b> | <b>Average growth in Hospitals (%)</b> | <b>Average growth in Hospital beds (%)</b> |
| 7.215   | 1.31   | 21.53                                  | 5.78                                       |

### C. Analysis of growth of Medical Tourism in India

Table 3 highlights the growth of medical tourism in India. Number of Foreign Tourist Arrivals (FTAs) in India for the purpose of medical treatment from the year 2009 to 2013 have been analysed and growth in the medical tourists has been computed as shown in table 3.

**TABLE 3. GROWTH OF MEDICAL TOURISM IN INDIA**

| Year | Total Foreign Tourist Arrivals (FTAs) | No. of Medical Tourists | Growth (%) |
|------|---------------------------------------|-------------------------|------------|
| 2009 | 5167699                               | 113689                  | -----      |
| 2010 | 5775692                               | 155944                  | 37.16      |
| 2011 | 6309222                               | 138803                  | -11        |
| 2012 | 6577745                               | 171021                  | 23.21      |
| 2013 | 6967601                               | 236898                  | 38.52      |

Source: India Tourism Statistics 2013

The results depict that from the year 2009 to 2010, medical tourism grew by 37.16%. After showing slightly negative growth in 2011, medical tourism again began to rise and it showed growth of 23.21% in 2012 and 38.52% in 2013 certainly due to India's good quality of care and infrastructure, and state-of-the-art technology used by the medical service providers.

|  |                |
|--|----------------|
| <b>Average Growth of Medical Tourism</b> | <b>21.97 %</b> |
|--|----------------|

## VI. CONCLUSION

Present study analysed the growth of healthcare in India and growth of medical tourism in India. The results depict that average growth in allopathic doctors is 4.195%, average growth in dental surgeons is 9.167%, average growth in nurses is 9.2%, average growth in medical colleges is 7.215%, average growth in dental colleges is 1.31%, average growth in hospitals is 21.53%, average growth in hospital beds is 5.78%, and average growth in medical tourism is 21.97 %. The findings of the study revealed that there is a positive relationship between the growth of healthcare sector and growth of medical tourism in India. The study also suggested that the healthcare sector of India should be further improved in order to increase medical tourism in India.

## BIBLIOGRAPHY

- [1]. Carruth, J.P.; and Carruth, K.A. (2010), "The Financial and Cost Implications of Medical Tourism", *International Business & Economics Research Journal*, vol.9, no.8, pp 135-140.
- [2]. Connell, John (2011), "Patients Without Borders", *Medical Tourism*, CABI, pp 1-11.

- [3]. Godwin, S.K. (2004), "Medical Tourism: Subsidising the Rich", *Economic and Political Weekly*, vol.39, no.36, pp 3981-3983.
- [4]. Indian Institute of Tourism and Travel Management (IITM) (2011), "A Study of Problems and Challenges faced by Medical Tourists Visiting India", *Ministry of Tourism, Government of India*, pp 1-94.
- [5]. Laing, Jennifer; Weiler, Betty (2007), "Mind, Body and Spirit: Health and Wellness Tourism in Asia" *Asian Tourism: Growth and Change*, pp 379-387.
- [6]. Lee, Ging, Chew (2010) "Health Care and Tourism: Evidence from Singapore" *Tourism Management*, vol 31, pp 486- 488.
- [7]. Lee, H.; Delene, M.L.; Bunda, A.M.; and Kim, C. (2000), "Methods of Measuring Health-care Service Quality", *Journal of Business Research*, vol.48, pp 233-246.
- [8]. Rad, F, N.; Som, M, P., A.; and Zainuddin, Y (2010), "Service Quality and Patients' Satisfaction in Medical Tourism", *World Applied Sciences Journal*, vol.10, pp 24-30.
- [9]. Stolley, S.K.; and Watson, S. (2012), "Background and History", *Medical Tourism: A Reference Handbook*, ABC-CLIO, pp 1-31.

**WEBSITES ACCESSED:**

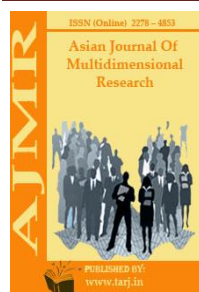
[www.tourism.gov.in](http://www.tourism.gov.in)

[www.cbhidghs.nic.in](http://www.cbhidghs.nic.in)

[www.jointcommissioninternational.org](http://www.jointcommissioninternational.org)

[www.nabh.co](http://www.nabh.co)





## GREEN MARKETING IN INDIA: AN OVERVIEW

Muskan Kaura \*

\*Assistant Professor in Commerce,  
Kamla Lohtia Sanatan Dharam College,  
Ludhiana, Punjab, INDIA.  
Email id: muskankaura1@gmail.com

---

### ABSTRACT

*Environmental pollution is a buzz word in today's business environment. In the modern age of globalization, it has become a challenge to keep our natural environment safe and that is the biggest need of the time. Consumers are also aware of the environmental issues like; global warming and the impact of environmental pollution. Green marketing is a phenomenon which has developed in the modern market and has emerged as an important concept in India as well as in other parts of the world, and is seen as an important strategy of facilitating sustainable development. In this research paper, main emphasis has been laid on green products, different ways to go green, green marketing as a competitive advantage and various companies opting green products and marketing.*

**KEYWORDS:** *Globalization, Facilitating, Phenomenon, Environment-Friendly, "Green Marketing*

## INTRODUCTION

There has been a growing consciousness among the consumers all over the world regarding protection of the environment in which they live. Various studies by environmentalists indicate that people are concerned about the environment and are changing their behaviour so as to be less aggressive towards it. Now we see that most of the consumers, both individual and industrial, are becoming more and more concerned about environment- friendly products. Most of them feel that environment-friendly products are safe to use. People do want to leave a clean earth to their offspring. As a result, the concept of green marketing has emerged, which aims at marketing socially- responsible products and services. Now is the period of eco- friendly, non-hazardous and environment- friendly goods. This has become the new mantra for marketers to satisfy the needs of consumers and earn better profits.

## REVIEW OF LITERATURE

Gurmeet Kaur (2004) in her work titled “Green Marketing: An Altitudinal and Behavioural Analysis of Indian Consumers” with an objective to study Indian consumers attitude states Indian consumers attitudes are fast changing and are going for more green labelled products.

Amitabha Ghose (2005) in his title “Green Marketing Strategies” emphasizes the market of ecological or green products are growing exponentially at global level with a focus on international marketing strategies of eco-companies. The study highlights the issues surrounding the marketing of ecological products in the international marketplace, the challenges and opportunities for the eco-companies for international marketing, including some case studies. Issues related to product modification, changes in the production process, labelling and packaging changes, modifying advertisement, certification for international market that conform to the green marketing norms are also dealt with.

Jacquelyn Ottman (2011) in her title “The New Rules of Green Marketing” helps to understand why value-based sustainability marketing has become a critical organizational capacity, and how readers can adopt these practices in their own organizations. Illustrated by examples from both leading mainstream brands are showing everyone else the way, the book provides practical strategies for building every aspect of a credible value- based green marketing strategy.

Smith (1992) in his work titled “Growth vs. Environment” documented that in Denmark farmers use converted nitrogen wastes from a biotechnology firm as fertilizer ,the biotechnology firm purchases waste water from a refinery for cooling .Interconnected waste streams -form of industrial symbiosis or industrial ecology evolve overtime ,meeting both the needs of economic viability and environmental quality.

Frank- Martin (2012) in their book “Sustainability Marketing: A Global Perspective” provides a sustainability- oriented vision of marketing for the twenty- first century. Adopting a consumer marketing focus, it emphasises integrating sustainability principles into both marketing theory and the practical decision making of marketing managers.

Pavan Mishra and Payal Sharma (2010) in their title “Green marketing in India: emerging opportunities and challenges” identifies the three particular segments of green consumers and explores the challenges and opportunities businesses have with green marketing .This work also examines the present trends of green marketing in India and describes the reason why companies are adopting it and future of green marketing and concludes that green marketing is something that will continuously grow in both practice and demand.

Suresh K. (2008) in his work titled “Green Marketing - Concept and Cases” discusses in his work green product design, supplier environment management, and green food chains and how green packaging can help marketers in increasing sales.

Pradeep K. Khandelwal (2006) in his title “An Assessment of Indian Consumer and Industry Attitudes towards Green marketing” the Indian consumers attitudes towards green products are becoming more and more favorable and compete in the International market and for long term survival Indian Companies have to manufacture more and more green products

### **OBJECTIVES OF THE STUDY**

The broad objective of the study is to make an observed investigation into the nature and extent to which green marketing is practiced in the Indian retail sector. The specific objectives are:

- I. To study about green company and green products.
- II. To discuss the different environmental protection laws prevalent in India.
- III. To study green marketing as a competitive advantage for the company.
- IV. To discuss the golden rules of green marketing.
- V. To study the different ways to go green.

### **A GREEN COMPANY**

A green company is based on its corporate vision that includes environmental concerns as the company’s functioning. Any company having concern for the community and environment can be called as a green company. Its policy is backed by a strategy with the following main elements:

- ✓ Observing environmental rules and regulations;
- ✓ Using natural resources economically;
- ✓ Taking account of environmental issues in decision- making;
- ✓ Working constructively with organizations that have concern about environment;
- ✓ Communicating the company’s environmental activities to staffs and customers;
- ✓ Providing support and advice on environmental matters related to the company’s operations.

### **ATTRIBUTES OF A GREEN PRODUCT:**

- (a) Reduces raw material, high recycled content (aluminium cans)
- (b) Non-polluting manufacture and non- toxic materials.
- (c) No unnecessary animal testing (cosmetics as in Body Shop).
- (d) No impact on protected species (dolphin- free tuna).
- (e) Low energy consumption during production/use/disposal (Compact Fluorescent Lamps bulb- It can save up to 80% energy).
- (f) Minimal or no packaging (farm products like vegetables).
- (g) Reuse/refill ability where possible (beverage containers, detergent bottles).
- (h) Post- consumer collection/disassembly system (refurbished parts in Cars).
- (i) Remanufacturing capacity.

### **GOLDEN RULES OF GREEN MARKETING**

- ❖ **KNOW YOUR CUSTOMER:** Make sure that the customer is aware of and concerned about the issues that your products attempts to address.

- ❖ **EDUCATING YOUR CUSTOMER:** It is the duty of marketer to educate the customer regarding green products that it protects our environment how and in what ways. If it is the case of so what then green marketing campaign goes nowhere.
- ❖ **BEING GENUINE AND TRANSPARENT:** being genuine means marketers are actually doing what they claimed to doing in their green marketing campaign.
- ❖ **ECO- INNOVATE:** Inventing new products, materials and technologies rather than changes in existing ones.
- ❖ **PROMOTE RESPONSIBLE CONSUMPTION:** Protection, Preservation and Conservation of natural resources are the motto.
- ❖ **REASSURE THE BUYER:** Customer must be made assure that product performs the job with respect to the environment.

### **WAYS TO GO GREEN**

- Say no to plastics.
- Unplug when not in use.
- Use less water, every drop counts.
- Use CFLs.
- Buy organic food.
- Walk more, drive less and opt for car pooling.
- Recycle more.
- Switch to green power e.g. solar power.
- Aware the world about Go Green, Live Green.

### **DEFINING GREEN MARKETING AS A CSR TOOL**

Concepts such as green, sustainable or organic marketing are becoming more widely used, reflecting the growing interest of society in the impact of growing consumption on the environment. Organic marketing is the study of the positive and negative aspects of marketing activities on pollution, energy consumption and non- energy consumption. This definition includes the following features: green marketing as a subset of the overall marketing activity examines positive and negative activities, and only a limited range of environmental issues. It follows that green marketing is based on the CSR of the triple-bottom-line principle, which characterizes green marketing as the marketing of products that are supposed to be environmentally friendly and environmentally sound. Social marketing is geared towards developing a supply of products that mitigate and provide minimal negative environmental impacts while increasing their quality. From an environmental point of view, it is defined as the effort of an enterprise to produce, promote, package, innovate and reuse the product so as to responsibly address environmental issues.

Green marketing consists of multiple activities designed to ensure the key aspect of marketing-product exchange with minimal negative environmental impact. Peattie defines green marketing as a holistic management process responsible for identifying, anticipating and meeting the needs of consumers and companies in an efficient and sustainable way. However, several sources point out that a more complete definition of green marketing is based on the process of planning, implementing and managing the development, pricing, promotion and distribution of products in a way that meets the criteria of meeting customer needs, achieving organizational goals of the business, and linking these processes to the ecosystem. The absence of a generally recognized

definition thus gives businesses the ability to create their own, based on their goals, risks and opportunities, competencies.

The main goal of green marketing is to present consumers with the importance of protecting the environment in the context of product consumption, placing an emphasis on building long-term relationships based on both sides of communication, not only with customers but also with other stakeholders and creating the natural need to be environmentally responsible.

### **GREEN MARKETING AND BUSINESS COMPETITIVENESS**

Competitive business environments vary depending on the requirements and demands of customers, regulations and opportunities to gain a saying advantage. Businesses face positive pressure to become environmentally efficient, contributing to their higher profitability, but also their overall economic stability. Many businesses implement green marketing, especially for reasons of opportunity, social and environmental responsibility, pressure from government and competition, and cost reduction. Getting a competitive advantage can be achieved through seven green marketing strategies for understanding the deeper connections between customer and stakeholder, environmental and social values, branding, and proactive business. Once the business wants to gain a sustainable competitive advantage, it must integrate environmental thinking into all aspects of marketing. This will only be achieved through the implementation of the green marketing strategy, as the basic prerequisite for future competitive struggle has become the solution of environmental issues and the level of implementation of the principles of green marketing, which will benefit from higher profitability, competitive advantage, improved stakeholder relations and better environmental performance.

### **GREEN MARKETING STRATEGY AND ITS APPROPRIATE CHOICE**

A holistically conceived strategy must also implementation of green marketing goals into business plans. Green marketing, as well as traditional marketing, carries two great themes marketing mix and marketing strategy. Marketing strategy is a continuous cycle in which individual STP (Segmenting, targeting, positioning) process sequences demand measurement, segmentation, target market selection, and positioning are conducive to competitive advantage. Based on the STP process, an enterprise approaches the creation and selection of an appropriate strategy.

Lean green an enterprise tries to be responsible for society, but does not focus on informing about these initiatives. It focuses on reducing costs and increasing efficiency through environmental activities, thereby building a competitive advantage based on low cost.

Defensive green an enterprise uses green marketing as prevention in times of crisis or protection from competition. Although environmental activities are promising and sustainable, the effort to promote them is irregular and temporary, because the intention is not to differ from competition through green activities.

Shared green an enterprise invests in environmentally sustainable processes over a long-term basis, requiring significant financial and non-financial resources. The company sees green marketing as the opportunity to build innovative products and technologies that meet customer needs, which gives it a competitive advantage. In the first place, it promotes the direct and tangible benefits provided to the consumer; the second is environmental activity.

Extreme green environmental issues are fully integrated into the business processes and product life cycle. The company often serves special markets (market gaps) through dedicated outlets and distribution channels.

### **EXAMPLES OF GREEN MARKETING IN INDIAN COMPANIES**

**Wipro and Infosys:** Wipro and Infosys's are going green. Wipro launched desktops, laptops are known as Wipro green wares. It was the first company in India who developed eco-sustainability in the form of energy, water efficiency and waste management. Wipro are actively seeking to become a very green company. Wipro has taken various initiatives to be green and the main objective of this is to become a carbon neutral, water positive and energy saving in business organization. Wipro designs products and solutions that can minimize hazardous waste. For the purpose of enhancing ecological sustainability, WIPRO is continuously offering green products.

Wipro has adopted a number of steps for ecological- sustainability at its corporate level also. Wipro wants to become fully carbon neutral and to achieve zero carbon emission by balancing the carbon released by the firm with equalling quantity off set. Wipro, Infosys reduced its per capita consumption of electricity and procured renewable energy. In future, every new building on campus follows integrated design methods for the purpose of maximizing the day light and reducing the heat. It will construct energy efficient building, at present also, in Wipro 18 building are certified to the international green standard. It replaced order office equipment with new energy saving equipment. Wipro and Infosys also installed solar panel also in their campus. We know that solar power is 70% cheaper than power generated by diesel. Solar energy has no adverse impact on our surrounding also. Products manufactured by these firms are less harmful to environment.

**Tata Limited:** This deals in mining and metal sector. It has given a green view to reduce its carbon foot prints. The objective of Tata Metalics Limited is to increase the green cover through plantation, ground water, power generation and use of natural fertilizers etc. The major green steps of this company are related to water utilization. It depends entirely on the ground water or no municipal supply and it will perform a complete water neutral operation.

**Suzlon Energy:** Suzlon energy also going green. Suzlon is the world's 4<sup>th</sup> largest wind power company among the greenest and best company in India. It is a renewable company manufacturer and produce wind Turbines, now Suzlon uses 30% power of renewable energy in India. It meets the need of present without compromising the capacity of future generation to meet their needs.

**Electronics sector:** The consumer electronics sector provides room for using green marketing to attract new customers. One example of this is HP's promise to cut its global energy use 20 percent by the year 2010.

**Introduction of CNG in Delhi:** New Delhi, capital of India, was being polluted at a very fast pace until Supreme Court of India forced a change to alternative fuels. In 2002, a directive was issued to completely adopt CNG in all public transport systems to control pollution.

**Maruti Udyog Ltd:** Greening of Supply Chain: The Company has remained ahead of regulatory requirements in pursuit of environment protection and energy conservation at its manufacturing facilities, and in development of products that use less natural resources and are environment friendly.



The company credited the employees as the prime reason that helped to excel in this direction. As a result the company has not only been able to recycle 100% of treated waste water but also reduced fresh water consumption. The company has implemented rain water harvesting, recyclable packing etc.

The company has been facilitating implementation of Environment Management System (EMS). Regular training programs are conducted for all the suppliers on EMS. Surveys are conducted to assess the vendors who need more guidance. The systems and the environmental performance of suppliers are audited.

#### **VARIOUS ENVIRONMENTAL LAWS PREVAILING IN INDIA:**

##### **WATER**

Water (Prevention and Control of Pollution) Act, 1974

Water (Prevention and Control of Pollution) Cess Act, 1977

Water (Prevention and Control of Pollution) Cess rules, 1978

##### **AIR**

Air (Prevention and Control of Pollution) Act, 1981

The Air (Prevention and Control of Pollution) Rules, 1982

Atomic Energy Act of 1982

Air (Prevention and Control of Pollution) Amendment Act, 1987

Motor Vehicles Act, 1988

##### **FORESTS AND WILDLIFE**

The Wildlife (Protection) Act, 1972, and Amendment Act 1991

The Forest (Conservation) Act, 1980

Environment Protection and Management Acts in General

Environment (Protection) Act, 1986

The Environment (Protection) Rules, 1986

The National Environment Appellate Authority Act, 1997

Acts relating to Management of Hazardous Wastes

Factories Act, 1948 and its Amendment in 1987

Public Liability Insurance Act, 1991

National Environment Tribunal Act, 1995

Recycling and E waste (Management and Handling) Rules, 2011

##### **CONCLUSION**

Green marketing should not neglect the economic aspect of marketing. Marketers need to understand the implications of green marketing. If we think customers are not concerned about environmental issues or will not pay a premium for products that are more eco-responsible, think

again. We must find an opportunity to enhance our product's performance and strengthen our customer's loyalty and command a higher price.

Nowadays, green marketing has become necessary to save the world from environmental pollution. From the marketing point of view, a good marketer is not only who satisfy the consumer needs but also produce and supply products according to the choice of the consumers. The business firm should know the benefits of selling green products. Making green products have to be achieved through out the complete supply chain. The firms should work constantly to find out the green material, methods of making green finished product which are commercially viable.

### **SUGGESTED SOLUTION**

1. Environmentally responsible organizations should attempt to minimize their waste.
2. Include green marketing in organisational policy.
3. Employee Awareness Program regarding green products.
4. Effective and transparent Communication.
5. Constantly Refine the Product and Processes.
6. Find new ways to go green.

Green marketing is still in its infancy and a lot of research is to be done on green marketing to fully explore its potential. Think of a refrigerator for example. While we may have had to be convinced in the 1950s to buy a refrigerator, we would have wanted the great white box to look cool in the 1970s, but in today's uncertain world, we might ask ourselves about the impact of the chlorofluorocarbons (CFCs) that our refrigerator is emitting and demand a more environment friendly refrigerator. So, if today's successful marketing is about appealing to personal values and delivering consumer empowerment, then surely the time is right to inject sustainable development into the marketing mix to help address some of the realistic issues currently facing our planet. Green marketing methods produce highly effective results. They apply all of the steps you need to cut costs, raise response rates and increase growth in the most important marketing metric we are all held accountable for-the bottom line.

### **REFERENCES**

- McCarthy, E. Jerome and William D. Perreault (1984), *Basic Marketing*, Homewood, Illinois: Richard D. Irwin, Inc.
- Sharma D.D. (2008), *Marketing Research: Principle Application & Cases*, N. Delhi, Sultan Chand & Sons.
- R. Shrikanth Et al, *Contemporary green marketing-brief reference to Indian scenario, International journal of social science and interdisciplinary research*, vol. I, Jan.2012. p.26-38.
- Dr. Sarawade W.K. , *Conceptual development of green marketing in India, Excel journal of engineering technology and management science*, vol. I, June 2012. p.1- 6.
- K. Uday Kiran, *Opportunity and challenges of green marketing with special reference to Pune, International journal of management and social science research*, vol.I,Oct.2012. p.18- 24.
- Rahul Singal Et al, *Green marketing: challenges and opportunity, International journal of innovation Engineering and technology*, vol. II, Feb.2013. p.470- 474

Bhattacharya, Sourabh (2011), “*Consumer Attitude towards Green Marketing in India*”, *The IUP Journal of Marketing Management*, Vol. 10, No. 4, p.62- 70.

Chopra, Sunil, Peter and Kalra, D.V.(2010), *Supply Chain Management- Text & Cases*, Pearson, New Delhi, p.109-110

Dhamija, Somesh, Agarwal, (2011) “*Place Marketing- Creating a Unique Proposition*”, *BVIMR Management Edge*, Vol. 4, No. 2, p.95- 98.

Diwani, Pawan, Saloni and Bodia, B.S.(2011), “*Green Marketing : A New Paradigm of Marketing in the Automobile Industry*, *Prabandhan : Indian Journal of Management*, Vol. 4, No. 5, p.29-35.

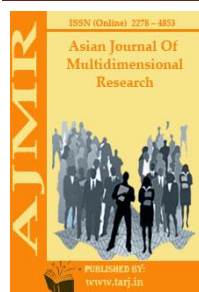
#### **WEBSITES**

<http://www.encyclopedia.com>

<http://www.google.com/>

<http://www.OpenLearningWorld.com/>

<http://www.wikipedia.com/>



## REACTION OF STOCK PRICES TO EARNINGS ANNOUNCEMENTS

**Prof. Iqbal Thonse Hawaldar \***

\*Professor,  
Department of Accounting & Finance,  
College of Business Administration &  
Director, Accreditation & Quality Assurance Centre,  
Kingdom University, BAHRAIN.  
Email id: thiqbal34@gmail.com

---

### ABSTRACT

*Speed of stock price response is important because if response is slow, the informed and alert investors would exploit it to earn abnormal returns by outperforming the market. This implies that market is inefficient in the semi-strong form. The study tests the reaction Indian stock market reaction to June 2014 quarterly financial results announcement. The study is based on 98 companies. The researcher used event study methodology. The behaviour of average abnormal returns (AARs) and cumulative average abnormal returns (CAARs) are examined for 30 days prior to and 31 days after the announcement of quarterly financial results. Runs test, sign test and t-test statistics on AARs are statistically not significant. However, t-values on CAARs are statistically significant. Therefore, we conclude that Indian stock market is not efficient in the semi-strong form.*

**KEYWORDS:** *Efficient market hypothesis, event study, semi strong form of efficiency, stock market reaction, Indian stock market.*

**INTRODUCTION:**

An empirical study to test the semi-strong form of efficient market hypothesis examines the speed and accuracy of adjustment of stock prices to release of certain new relevant information. Security prices are expected to respond to the relevant new information as and when it reaches the market. In an efficient market, stock prices reflect available information fully and instantaneously. In other words, efficiency of stock market is reflected in two ways, i.e. speed and accuracy. Speed refers to time taken by the stock to respond to new publicly available relevant information. Woodruff and Senchack (1988) asserted that the adjustment process is assumed to be over when the likelihood of continuation (reversal) comes back to the level expected in non-announcement period.

A semi-strong form of efficient market is a market in which adjustment of stock prices to new publicly available information is not only rapid, but also accurate, i.e., in the right direction and of right magnitude. There should not be any bias in the adjustment of stock prices to new information and if there is no systematic bias in the adjustments of stock prices to new information, the average price movement will be zero. Therefore, speed and accuracy of stock price adjustment is important to consider any stock market as an efficient market. Both underreaction and overreaction to new price sensitive information would offer an opportunity to investors to systematically beat the market and earn abnormal returns, which is inconsistent with semi-strong form of efficient market hypothesis.

**REVIEW OF LITERATURE:**

Patell and Wolfson (1984) investigated the intra-day speed of adjustment of stock prices to earnings and dividend announcement. They selected a sample of 571 earnings and 96 dividend announcements during 1976 to 1977. Patell and Wolfson (1984) measured effects of earnings and dividend announcements on intra-day stock price behaviour around mean returns, return variance, and serial correlation in consecutive price changes. The analysis of the results suggested that price reaction to earnings and dividend announcements begins very quickly. There are many studies, which support the view that stock market is semi-strong form of efficient market hypothesis. However, there are many empirical studies that questioned the semi-strong form of efficient market hypothesis. In efficient market hypothesis literature these studies are commonly called 'anomalies. According to Ball (1992) "the anomaly is that estimated future abnormal returns are predicted by public information about future earnings, contained in (i) current earnings and (ii) current financial statement ratios" (p.319). There is a consistent anomaly in the behaviour of security prices after the announcement of earnings, dividends, merger and acquisition, stock split, bonus issue, rights issue etc. Brown (1979) examined the adjustment of stock prices to earning per share (EPS) information. The study covered a period from 1963 to 1971 with a sample of 158 firms. He used residual analysis method previously used by Ball and Brown (1968), Brown and Kennelly (1972), Fama et al. (1969), Kaplan and Roll (1970) and Pettit (1972). The analysis of the results suggested that statistically significant cumulative abnormal returns appeared from day 15 to day 45. This indicated that the market failed to adjust instantaneously to the new EPS information and provided an opportunity to earn excess returns on the EPS information after 45 days of announcement. Moreover, the excess returns from purchasing the qualifying security at the time of publication of the EPS information substantially higher than transaction costs.

Ball and Bartov (1996) re-examined Rendleman, Jones, and Latane (1987) and Bernard and Thomas (1990) hypothesis and reported that investors use a naïve seasonal random walk model for quarterly earnings. The sample comprises of 70,728 quarterly earnings announcements made by the NYSE and AMEX firms during 1974 to 1986. The analysis of the results revealed that the four lagged standardised unexpected earnings (SUE) variables have the predicated reversed (-, -, -, +) signs and each is significant at the 1% level of t- statistics. This indicates that the investors are being aware of the signs of serial correlation in seasonally differenced earnings.

Narayan Rao (1994) examined stock price adjustment to corporate financial policy announcements such as increase in dividend, bonus issue, and equity rights issue. The study covered different periods for different events. Dividend increase announcement covered a period from 1987 to 1988, bonus and rights issue announcement from 1988 to 1989. The sample consisted of 65 firms for dividend increase announcement, 42 firms for bonus issue announcement and 40 firms for equity rights issue announcements. Chaturvedi (2000a) attempted to determine the existence of post-earnings announcement drift using unexpected half-yearly earnings information. The sample used for the study consisted of 90 companies listed on BSE and fulfilled the criteria determined by Chaturvedi. He found that pre-announcement cumulative abnormal returns of 10.10 percent are also significant at 0.01 levels.

Chaturvedi (2000b) examined effect of price/earnings ratio in both pre-and post-earnings announcement periods. The sample consisted of 90 companies, which fulfilled certain criteria, and the study covered a period from January 1990 to March 1996. Based on price/earnings ratio the sample was divided into five portfolios. The overall results suggested that the stock prices do not reflect price/earnings ratio quickly which was against the semi-strong form of efficient market hypothesis. Mallikarjunappa and Iqbal (2003, 2013) investigated stock price reactions to quarterly earnings announcement for the quarter ended June 30, 2001. They selected a sample of 30 companies, which are listed on BSE and included in the BSE Sensitive index. The results of the study indicated that abnormal returns occur throughout the sample period and the stock price adjustment to quarterly earnings announcement is delayed. This contradicts semi-strong form of efficient market hypothesis. Mallikarjunappa (2004a) investigated stock price reaction to quarterly earnings announcements. The study was based on 30 companies, which were included in the BSE Sensex and covered the period from January 1, 2000 to May 16, 2003. Therefore, he concluded, there is no statistical evidence to show that the Indian stock market is efficient in the semi-strong form. Iqbal and Mallikarjunappa (2003, 2007a, 2007b, 2007c, 2009, 2010, 2011) and Iqbal (2005, 2014) concluded that Indian stock market is not efficient in semi strong form of EMH. Hawaldar (2016) tested the reaction of Bahrain Bourse to announcement of annual financial results and concluded that the reaction of stock prices to earnings announcements are slow.

## **OBJECTIVES OF THE STUDY**

The review of the empirical studies conducted in the Indian stock market showed that there is no conclusive evidence to accept that Indian stock market is semi-strong form efficient or inefficient. In this background this study is conducted with the following objectives:

1. To test whether the semi-strong form of efficient market hypothesis holds in the Indian stock market.
2. To test the stock price responses to the quarterly earnings announcements.



## HYPOTHESES

Since this study examines the semi-strong form of efficient market hypothesis taking the quarterly earnings announcements as an event, the hypotheses being tested are:

1. That the responses of stock prices to the quarterly earnings announcements are complete on the day of the announcement.
2. That the investors cannot earn abnormal returns by trading in the stocks after the quarterly earnings announcements.
3. That the average abnormal returns and the cumulative average abnormal returns are close to zero.
4. That the average abnormal returns occur randomly.
5. That there is no significant difference between the number of positive and negative average abnormal returns.

## RESEARCH METHODOLOGY

Used a two-stage approach to test the stock price responses to quarterly earnings announcement. The first stage consists of estimation of parameters like alpha, beta based on the ex-post returns on stocks and market index and expected returns on each of the stocks based on the market model. In the second stage these estimated parameters are used to calculate abnormal returns around the event day. In this study, the date of quarterly earnings announcement is defined as day 0 or event day. If event day is a non-trading day, then the immediately following trading day is considered as event day. Pre-announcement period includes 30 trading days prior to the earnings announcement date, i.e., days -30 to -1. Post announcement period includes 30 trading days after the earnings announcement i.e., days +1 to +30. Thus, we have taken the event window of 61 trading days (including day 0 as the event day). The estimated abnormal returns are averaged across securities to calculate average abnormal returns (AARs) and average abnormal returns are then cumulated over time to ascertain cumulative average abnormal returns (CAARs).

Mathematically market model can be expressed as:

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} + e_{it} \quad \text{for } i = 1, \dots, N$$

We need the values of  $\alpha_i$  and  $\beta_i$  to estimate the expected returns. Therefore, the following simplified model of regression is used for estimating the returns on each security by taking the actual returns on market,  $R_{mt}$ . This model used by Brown and Warner (1980, 1985), Fuller and Farrell, Jr., (1987, p.105), Mallikarjunappa and Iqbal (2003), Iqbal and Mallikarjunappa (2007, 2009, 2010).

$$\text{Expected Return} = E(R_{it}) = \alpha_i + \beta_i R_{mt}$$

Calculation of abnormal returns is necessary to know the existence of market efficiency. The abnormal returns are computed using the following model:

$$AR_{it} = e_{it} = R_{it} - E(R_{it}),$$

Where,

$R_{it}$  = Actual Returns

The following model is used for computing the average abnormal returns (AARs):

$$AAR_{it} = \frac{\sum_{i=1}^N AR_{it}}{N} \quad \text{For } i = 1 \dots N; t = -30 \dots 0 \dots +30$$

Where,  $i$  = the number of securities in the study

$N$  = total number of securities.

$t$  = the days surrounding the event-day

Generally, if market is efficient, the CAAR should be close to zero [Brown and Warner (1980, 1985), Fuller and Farrell, Jr., (1987, p.105), Mallikarjunappa and Iqbal (2003), Iqbal and Mallikarjunappa (2007, 2009, 2010)]. The model used to ascertain CAAR is:

$$CAAR_t = \sum_{t=-30}^K AAR_{it} \quad \text{Where } k = -30 \dots 0, \dots +30.$$

The conclusions are based on the results of  $t$  values on AARs and CAARs for the event window. The  $t$  test statistics for AAR for each day during the event window is calculated as:

$$t = \frac{AAR}{\sigma(AAR)}$$

Where,

AAR = Average abnormal return

$\sigma(AAR)$  = Standard error of average abnormal return

The  $t$  statistics for CAAR for each day during the event window is calculated by using following formula:

$$t = \frac{CAAR}{\sigma(CAAR)}$$

Where,

CAAR = Cumulative average abnormal return

$\sigma(CAAR)$  = Standard error of cumulative average abnormal return

The standard error is calculated by using following formula:

$$S.E = \frac{\sigma}{\sqrt{n}}$$

Where,

S.E. = Standard Error

$\sigma$  = Standard Deviation

$n$  = Number of Observations

Runs test has been used to analyse the randomness in the behaviour of AARs. Runs test is carried on AARs before and after the event day and for the event window.

Mean number of runs to be computed using the following method:

$$\mu_r = \left( \frac{2n_1n_2}{n_1 + n_2} \right) + 1$$

Where,

$\mu_r$  = Mean number of runs

$n_1$  = Number of positive AARs

$n_2$  = Number of negative AARs

$r$  = Number of runs (actual sequence of counts)

The standard error of the expected number of runs can be computed by using following formula:

$$\sigma_r = \sqrt{\frac{2n_1n_2(2n_1n_2 - n_1 - n_2)}{(n_1 + n_2)^2(n_1 + n_2 - 1)}}$$

A standardised variable 'Z' as under can express the difference between actual and expected number of the runs:

$$Z = \frac{r - \mu_r}{\sigma_r}$$

The null hypothesis (AARs occur randomly) will be accepted (or rejected) at 5% level of significance against (or in favour of) the alternative hypothesis (AARs do not occur randomly) depending on whether computed values of Z is within the range of critical value of  $\pm 1.96$ .

The sign test on AARs carried out to test the null hypothesis that there is no significant difference between the number of positive and negative AARs.

The standard error of the proportion ( $\sigma_p$ ) is calculated as under:

$$\sigma_p = \sqrt{\frac{pq}{n}}$$

Where,

$\sigma_p$  = Standard error of the proportion

P = Expected proportion of positive AARs = 0.5

q = Expected proportion of negative AARs = 0.5

$n$  = Number of AARs

To compute the value of sign test we used the following equation:

$$Z = \frac{\bar{p} - p_{H_0}}{\sigma_p}$$

Where,

$\bar{p}$  = Actual proportion of AARs in the respective quarters having positive signs

$p_{H_0}$  = Hypothesised proportion = 0.5

We calculated sign test statistics before and after the event day and during the event window.

The following methodology is used for computing returns and beta:

Returns on stock price are given by:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}}$$

Where,

$R_{it}$  = Return on security 'i' during time period 't'.

$P_{it}$  = Closing price of security 'i' for period 't'.

$P_{it-1}$  = Closing price of security 'i' for period 't-1'.

Returns on market index are given by:

$$R_{mt} = \frac{I_{it} - I_{it-1}}{I_{it-1}}$$

Where,

$R_{mt}$  = Return on market index m during time 't'.

$I_{it}$  = Closing value of market index corresponding to the period of security 'i' for time 't'.

$I_{it-1}$  = Closing value of market index corresponding to the period of security 'i' for time 't-1'.

Beta is calculated using following equation:

$$\beta_i = \frac{N \sum_{t=1}^N R_{mt} R_{it} - \left( \sum_{t=1}^N R_{mt} \right) \left( \sum_{t=1}^N R_{it} \right)}{N \left( \sum_{t=1}^N R_{mt}^2 \right) - \left( \sum_{t=1}^N R_{mt} \right)^2}$$

Where,

$\beta_i$  = Slope of a straight line or beta coefficient of security 'i'

N = Number of observations

$R_{mt}$  = Return on market index 'm' during period 't'

$R_{it}$  = Return on security 'i' during period 't'

**ANALYSIS OF THE RESULTS OF THE STUDY:**

The results for the June 2014 quarter are presented in Tables.

**TABLE1: AARS AND CAARS SURROUNDING THE EVENT**

| Market Model with Raw Returns |          |          | Market Model with Log Returns |          | Market Model with Raw Returns |          |          | Market Model with log Returns |          |
|-------------------------------|----------|----------|-------------------------------|----------|-------------------------------|----------|----------|-------------------------------|----------|
| Days                          | AARs     | CAARs    | AARs                          | CAARs    | Days                          | AARs     | CAARs    | AARs                          | CAARs    |
| -30                           | 0.57762  | 0.57762  | 0.00478                       | 0.00478  | 1                             | -0.20346 | -0.31073 | -0.00324                      | -0.05707 |
| -29                           | -0.10517 | 0.47245  | -0.00168                      | 0.00310  | 2                             | 0.33282  | 0.02209  | 0.00246                       | -0.05461 |
| -28                           | -0.45252 | 0.01993  | -0.00490                      | -0.00181 | 3                             | -0.81913 | -0.79704 | -0.00925                      | -0.06385 |
| -27                           | -0.70852 | -0.68859 | -0.00737                      | -0.00918 | 4                             | 0.38915  | -0.40789 | 0.00238                       | -0.06147 |
| -26                           | 0.24989  | -0.43870 | 0.00189                       | -0.00729 | 5                             | 0.07362  | -0.33428 | 0.00006                       | -0.06141 |
| -25                           | -1.15241 | -1.59111 | -0.01212                      | -0.01941 | 6                             | 1.11093  | 0.77665  | 0.01038                       | -0.05103 |
| -24                           | -0.20894 | -1.80005 | -0.00247                      | -0.02187 | 7                             | 0.14576  | 0.92241  | 0.00090                       | -0.05014 |
| -23                           | -0.29460 | -2.09465 | -0.00293                      | -0.02480 | 8                             | -0.11885 | 0.80356  | -0.00131                      | -0.05145 |
| -22                           | 0.22825  | -1.86640 | 0.00208                       | -0.02273 | 9                             | 0.90083  | 1.70439  | 0.00818                       | -0.04327 |
| -21                           | 0.73225  | -1.13415 | 0.00658                       | -0.01615 | 10                            | 1.12836  | 2.83276  | 0.01038                       | -0.03289 |
| -20                           | 0.27965  | -0.85450 | 0.00200                       | -0.01414 | 11                            | 0.73102  | 3.56378  | 0.00695                       | -0.02594 |
| -19                           | 0.01261  | -0.84188 | -0.00031                      | -0.01446 | 12                            | 0.32337  | 3.88714  | 0.00232                       | -0.02362 |
| -18                           | 0.62198  | -0.21990 | 0.00535                       | -0.00911 | 13                            | 0.15470  | 4.04185  | 0.00085                       | -0.02277 |
| -17                           | -0.26733 | -0.48723 | -0.00310                      | -0.01221 | 14                            | 0.20693  | 4.24878  | 0.00168                       | -0.02108 |
| -16                           | -0.81053 | -1.29776 | -0.00866                      | -0.02087 | 15                            | 0.13285  | 4.38163  | 0.00067                       | -0.02042 |
| -15                           | 0.47783  | -0.81993 | 0.00433                       | -0.01653 | 16                            | 0.23803  | 4.61966  | 0.00201                       | -0.01840 |
| -14                           | 0.16881  | -0.65111 | 0.00091                       | -0.01562 | 17                            | 0.56687  | 5.18653  | 0.00524                       | -0.01317 |
| -13                           | -0.37395 | -1.02507 | -0.00412                      | -0.01974 | 18                            | 0.97073  | 6.15727  | 0.00894                       | -0.00423 |
| -12                           | 0.29324  | -0.73183 | 0.00220                       | -0.01755 | 19                            | 0.84633  | 7.00359  | 0.00796                       | 0.00373  |
| -11                           | -0.27060 | -1.00243 | -0.00407                      | -0.02161 | 20                            | 0.64938  | 7.65298  | 0.00573                       | 0.00947  |
| -10                           | 0.11232  | -0.89011 | 0.00009                       | -0.02152 | 21                            | -0.23587 | 7.41710  | -0.00269                      | 0.00677  |
| -9                            | -0.61731 | -1.50742 | -0.00699                      | -0.02851 | 22                            | 1.09839  | 8.51549  | 0.01059                       | 0.01736  |
| -8                            | 0.46036  | -1.04707 | 0.00389                       | -0.02461 | 23                            | -0.00915 | 8.50634  | -0.00092                      | 0.01645  |
| -7                            | 0.03137  | -1.01570 | -0.00060                      | -0.02521 | 24                            | 0.19203  | 8.69837  | 0.00185                       | 0.01830  |
| -6                            | -1.42524 | -2.44094 | -0.01531                      | -0.04053 | 25                            | 1.22158  | 9.91995  | 0.01202                       | 0.03031  |

|    |              |          |          |          |    |              |          |              |         |
|----|--------------|----------|----------|----------|----|--------------|----------|--------------|---------|
| -5 | -<br>0.22167 | -2.66261 | -0.00278 | -0.04331 | 26 | -<br>0.05464 | 9.86531  | -<br>0.00114 | 0.02918 |
| -4 | -<br>0.93500 | -3.59761 | -0.01109 | -0.05439 | 27 | 0.65512      | 10.52043 | 0.00640      | 0.03557 |
| -3 | -<br>0.44313 | -4.04074 | -0.00493 | -0.05932 | 28 | 0.35562      | 10.87605 | 0.00296      | 0.03853 |
| -2 | -<br>0.28072 | -4.32146 | -0.00378 | -0.06310 | 29 | -<br>0.27140 | 10.60465 | -<br>0.00340 | 0.03513 |
| -1 | -<br>0.67446 | -4.99592 | -0.00727 | -0.07036 | 30 | 0.06525      | 10.66990 | 0.00023      | 0.03535 |
| 0  | 4.88865      | -0.10727 | 0.01654  | -0.05383 |    |              |          |              |         |

The results presented in Table 1 under market model with raw returns and market model with log returns shows that during the event window negative AARs exists for 24 days (39.34%) and 26 days (42.62%) respectively as compared to positive for 37 days (60.66%) and 35 days (57.38%). This implies that AARs are positive for most of the days under both the models. CAARs are negative for as high as 27 days (90.00%) and positive for as low as 3 days (10%) before the event day as against 5 days (16.13%) and 26 days (83.87%) after the event day. By observing the results, before the event day CAARs are negative for as high as 90% of days. However, after the event day there is a reverse trend and CAARs are positive for 83.87% of days. Of the 61 days CAARs are negative for 32 days (52.46%) and positive for 29 days (47.54%). However, under market model with log returns CAARs are negative for as high as 28 days (93.33%) and positive for only 2 days (6.67%) before the event day as against 19 days (61.29%) and 12 days (38.71%) respectively after the event day. This means that the numbers of negative CAARs are decreased from 28 days to 19 days after the event day, a decrease of 9 days. While, positive CAARs increased from 2 days to 12 days. Of the 61 days, CAARs are negative for majority of days i.e., 47 days and remaining days it is positive.

Comparative analysis of the results under both the models reveals that for the full period of 61 days, under market model with raw returns CAARs are negative for 32 days and positive for 29 days as against as high as 47 days and 14 days respectively under market model with log returns. From the above analysis it is evident that the choice of the model affected the overall results based on CAARs.

In Table 2 an attempt is made to present briefly runs test and sign test statistics.

**TABLE 2: RUNS AND SIGN TEST STATISTICS**

|                | Market Model with Raw Returns |                 |                 | Market Model with Log Returns |                 |                 |
|----------------|-------------------------------|-----------------|-----------------|-------------------------------|-----------------|-----------------|
|                | Runs                          | Runs Statistics | Sign Statistics | Runs                          | Runs Statistics | Sign Statistics |
| <b>Before</b>  | 14                            | -0.6562         | -0.7303         | 16                            | 0.4279          | -1.4606         |
| <b>After</b>   | 15                            | 1.6767          | 3.0533          | 15                            | 1.6767          | 3.0533          |
| <b>Overall</b> | 29                            | -0.3018         | 1.6645          | 31                            | 0.0433          | 1.1523          |

It can be seen from Table 2 that the computed value of runs test is not significant at 5% level. Therefore, we accept that ARs occur randomly and there is no trend. This prevents traders from making profits based on daily trading.



The sign test statistics shows that for the event window of 61 days computed values falls within the acceptance region. Therefore, we conclude that there is no significant difference between the number of positive and negative AARs.

The parametric t-test statistics are shown in Table 3.

**TABLE 3: T-TEST STATISTICS ON AARS AND CAARS**

|               | Market Model with Raw Returns |        |      |        | Market Model with Log Returns |        |      |        |
|---------------|-------------------------------|--------|------|--------|-------------------------------|--------|------|--------|
|               | AAR                           | %      | CAAR | %      | AAR                           | %      | CAAR | %      |
| <b>Bef-RT</b> | 0                             | 0.00   | 0    | 0.00   | 0                             | 0.00   | 0    | 0.00   |
| <b>Bef-LT</b> | 3                             | 100.00 | 26   | 100.00 | 4                             | 100.00 | 27   | 100.00 |
| <b>Aft-RT</b> | 6                             | 100.00 | 25   | 86.21  | 5                             | 83.33  | 12   | 38.71  |
| <b>Aft-LT</b> | 0                             | 0.00   | 4    | 13.79  | 1                             | 16.67  | 19   | 61.29  |
|               |                               |        |      |        |                               |        |      |        |
| <b>Tot-RT</b> | 6                             | 66.67  | 25   | 45.45  | 5                             | 50.00  | 12   | 20.69  |
| <b>Tot-LT</b> | 3                             | 33.33  | 30   | 54.55  | 5                             | 50.00  | 46   | 79.31  |

The t-values on AARs interpreted by taking the maximum percentage of days having statistically significant t-values for all the three portfolios under both the models. This reveals that the t-values on AARs are significant for less than 20% of days and for the remaining more than 80% of the days they are not significant. This shows that AARs are not significantly different from zero for most of the days. This indicates that market is efficient based on AARs.

However, t-values on CAARs are interpreted by taking minimum percentage of days having statistically significant t-values for all the three portfolios under both the models. For example, 95.08%, 85.25% and 90.16% of the days t-values on CAARs are statistically significant under both the models. This indicates that t-values for CAARs are significant for more than 52 days out of 61 days (more than 85%).

Therefore, we infer that CAARs are greater than zero for more than 85% of the days and anyone who had bought these shares either before or after the quarterly earnings announcement and held them would have earned abnormal returns that are not attributable to market factors. Therefore, we conclude that there is no empirical evidence to show that Indian stock market is semi-strong form efficient during the June 2014 quarter. The results are similar to Mallikarjunappa and Iqbal (2003, 2013), Iqbal and Mallikarjunappa(2007, 2009, 2010, 2011) who showed that for the quarter June 2001 Indian stock market is not semi-strong form efficient.

## CONCLUSION

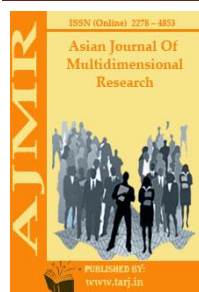
Based on the Runs test statistics on AARs, we accept the hypothesis that the AARs occur randomly and there is no trend. This prevents traders from making profits based on daily trading. The sign test statistics shows that for the event window of 61 days computed values falls within the acceptance region. Therefore, we conclude that there is no significant difference between the number of positive and negative AARs. Based on t test values on CAARs, we infer that anyone who had bought these shares either before or after the announcement of quarterly financial results and held them would have earned abnormal returns that are not attributable to market factors. Therefore, the study concludes that the reaction of Indian stock market to the announcement of quarterly financial results is very slow. These results also supports the results of the studies conducted by Jones and Litzenberger (1970), Litzenberger, Joy and Jones (1971),

Brown and Kennelly (1972), Jones (1973), Joy, Litzenberger and McEnally (1974), Latane, Jones and Rieke (1974), Foster (1977), Watts (1978), Foster, Olsen and Shevlin (1984), Rendleman, Jones and Latane (1987), Freeman and Tse (1989), Bernard and Thomas (1989, 1990), Ball and Bartov (1996) in the U.S.A and Obaidullah (1990), Chaturvedi (1999, 2000a,b, 2001), Mallikarjunappa (2004a, 2004b), Iqbal and Mallikarjunappa (2003, 2007a, 2007 b, 2008a, 2008b, 2008c, 2009, 2010, 2011) Iqbal (2005, 2014) in India and Hawaldar (2016) in Bahrain.

## REFERENCES

1. Ball, R & Brown, P. (1968). An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, 6(2), 159-178.
2. Bernard, V & Thomas, J. (1989). Post-earnings announcement drift: Delayed price response or risk premium? *Journal of Accounting Research*, 27, 1-36.
3. Bernard, V & Thomas, J. (1990). Evidence that stock prices do not fully reflect the implications of current earnings for future earnings). *Journal of Accounting and Economics*, 13 (4), 305-340.
4. Chaturvedi, H. (2000a). Anomalies based on P/E ratios: Empirical evidence from the Indian stock market. *IUP Journal of Applied Finance*, 6 (3), 1-13.
5. Chaturvedi, H. (2000b). Empirical anomalies based on unexpected earnings: The Indian experience. *IUP Journal of Applied Finance*, 6(1), 52-64. Fama, E F, Fisher, L, Jensen, M & Roll, R. (1969).
6. Hawaldar, I. T. (2016). The Reaction of Bahrain Bourse to Announcement of Annual Financial Results. *International Review of Business Research Papers*, 12(1), 64 -75.
7. Iqbal, & Mallikarjunappa, T. (2007a). An Empirical Investigation of the Adjustment of Stock Prices to Earnings Information. *ACRM Journal of Business and Management Research*, 2(1), 10-15.
8. Iqbal, & Mallikarjunappa, T. (2007b). Market Reaction to Earnings Information: An Empirical Study. *AIMS International Journal of Management*, 1(2), 153-167.
9. Iqbal, & Mallikarjunappa, T. (2008a). An Empirical Testing of Semi-Strong Form Efficiency of Indian Stock Market. *The Journal of Amity Business School*, 9(1), 24-33.
10. Iqbal, & Mallikarjunappa, T. (2008b). Quarterly Earnings Information, Stock Returns and Stock Market Efficiency: An Empirical Study. *Gyan Management -International Biannual Refereed Journal of Management and Technology*, 2(2), 37-52.
11. Iqbal, & Mallikarjunappa, T. (2008c). The Behaviour of Indian Stock Prices and Returns: Is the Stock Market Efficient? *Scour*, 2(2), 39-46.
12. Iqbal, & Mallikarjunappa, T. (2009). Indian Stock Market Reaction to Quarterly Earnings Information. *Indian Journal of Finance*, 3(7), 43-50.
13. Iqbal, & Mallikarjunappa, T. (2010). A Study of Efficiency of the Indian Stock Market. *Indian Journal of Finance*, 4(5), 32-52.
14. Iqbal, (2005). Efficiency of Indian Stock Market: A Study of Stock Price Responses to Earnings Announcement of Selected Companies Listed on Bombay Stock Exchange. Unpublished PhD Thesis Submitted to the Mangalore University, India.
15. Iqbal, Mallikarjunappa, T., & Nayak, P. (2007). Stock Price Adjustments to Quarterly Earnings Announcement: A Test of Semi-strong Form of Efficiency. *Gyan Management - An International Biannual Refereed Journal of Management and Technology*, 1(2), 25-42.

16. Iqbal, T.H., & T. Mallikarjunappa. (2011). Efficiency of Stock Market: A Study of Stock Price Responses to Earnings Announcements. Published by LAP Lambert Academic Publishing Company, Germany.
17. Iqbal. (2014). Seasonal Analysis of Abnormal Returns after Quarterly Earnings Announcements. *International Journal of Accounting and Financial Reporting*; Doi:10.5296/ijafr.v4i2.6622 URL: <http://dx.doi.org/10.5296/ijafr.v4i2.6622>, 4(2), 501-519.
18. Mallikarjunappa, T., & Iqbal (2003). Stock price reactions to earnings announcement. *Journal of IAMD and IUCBER*, 26(1), 53-60.
19. Mallikarjunappa, T., & Iqbal, T. H. (2013). An Investigation of the Semi-strong Form of Stock Market Efficiency. In *Proceedings of Tenth AIMS International Conference*, 1, 1588-1596.
20. Rao, N.S. (1994). The adjustment of stock prices to corporate financial policy announcements. *Finance India*, 8 (4), 941-953.
21. Rendleman, R, Jones, CP & Latane, HA. (1982). Empirical anomalies based on unexpected earnings and the importance of risk adjustments. *Journal of Financial Economics*, 10(3), 269-287.
22. Srinivasan, R. (1997). Security prices behavior associated with right issue related events. *IUP Journal of Applied Finance*, 3 (1), 50-62



## ROLE OF CIVIL SOCIETY IN EMPOWERMENT OF WEAKER SECTIONS

**Dr. Mohinder Singh\***

\*Professor (Retd.),  
Former Administrator (RPIIT-Technical and,  
Medical Campus, Karnal-Haryana), INDIA.  
Email id: msingh\_kuk@yahoo.co.in

---

### ABSTRACT

*Empowerment of weaker sections of our society through their civil, socio-economic and cultural development is a big challenge which the government alone cannot meet. Here emerges the need of effective and efficient role of civil society. No doubt, a large number of schemes and programmes have been formulated and implemented for the development of weaker sections but their empowerment could not take place up to the expected level. If the civil society is committed, sincere, dedicated and devoted it can play a significant role in their empowerment.*

**KEYWORDS:** *Uncoerced, Blurred, Advocacy, Distinct, Endeavor, Determent, Indecent, Reconceptualizing, Vulnerable, Empowerment, Supersession, Juvenile, Indebtedness, Malnutrition, Tangible, Facilitation, Requisite, Dissemination, Concerted, Competence, Cherished, Mobilization, Vigilance, Under-Privileged.*

**INTRODUCTION:**

According to the UNDP, "Civil society refers to non-profit organizations and institutions, distinct from the state, the market and the family. Civil Society Organisations include community groups, academics and research institutions, NGOs, cultural groups, professional associations and religious groups." 1 It has been aptly observed that, "civil society is composed of the totality of voluntary civil and social organisations and institutions that form the basis of a functioning society as opposed to the forced backed structures of a state (regardless of that State's Political system) and commercial institutions of the market."2 The London School of Economics (Centre for Civil Societies) states: "Civil society refers to the arena of uncoerced collective action around shared interests, purposes and values. In theory, its institutional forms are distinct from those of the state, family and market, though in practice, the boundaries between state, civil society, family and market are often complex, blurred and negotiated. Civil society commonly embraces a diversity of spaces, actors and institutional forms, varying in their degree of formality, autonomy and power, civil societies are often populated by organisations such as registered charities, development non-governmental organisations, professional associations, trade unions, self help groups, social movements, business associations, coalitions and advocacy groups."3

It is a fact that civil society plays an important role in the civil, political, social, cultural and economic development of the society. It has a distinct entity from the state and works independently. Moreover, it may not be confused with family or a class or a locality.<sup>4</sup> Nielson, reconceptualizing civil society, has observed that a viable civil society is a kind of third force between the state and the economy, on the one hand, and the private sphere, on the other. It seems to require some effective sense of community and of there actually being a community to which people are committed.<sup>5</sup>

**Weaker Sections and Constitution of India**

Weaker sections consist of Scheduled Castes, Scheduled Tribes, Backward Classes, Other Backward Classes, Women and Children from vulnerable sections in rural and tribal areas and urban slums, physically and mentally handicapped, destitute, unemployed, beggars, aged and infirm in particular. The Preamble to the Constitution declares that social, economic and political justice will be done to all the citizens. The Preamble guarantees equality of status and opportunity. Article 14 provides that the State shall not deny equality to any person and ensure equal protection of laws to him. Article 15 prohibits discrimination on the grounds of religion, race, caste, sex or place of birth with regard to such matters as (a) access to shops, public restaurants, hotels and places of public entertainment; or (b) use of wells, tanks, bathing ghats, roads and places of public resort maintained wholly or partly out of State funds or dedicated to the use of general public. This Article operationalizes the concept of equality in a manner which specifically touches upon the constitutions of SCs, STs and OBCs. Equality of opportunity in public employment has been provided by Article 16. Article 16(4) states: "that nothing in this article shall prevent the State from making any provision for the reservation of appointments of posts in favour of any backward classes of citizens, if the opinion of the State is not adequately represented in the services under the States." Article 17 abolishes untouchability and its practice in any form. Article 330 makes provision for reservation of seats for the Scheduled Castes and Scheduled Tribes in the House of People. Reservation of seats has also been provided to these castes in the State Legislatures through Article 332. In pursuance of Article 338 of the Constitution, a Commissioner for SCs and STs is appointed by the President of India to investigate all matters relating to their safeguards and report to the Parliament at intervals. Article 340 provides for appointment of Commission to investigate into the conditions of the Backward Classes of people and difficulties

they are faced with and suggest measures that should be taken by the Union and State Governments to overcome them and improve their conditions. The reports submitted by the Commission are placed before the parliament.

Article 19 assures freedom of speech and expression; freedom to assemble peaceably without arms; freedom to form associations or unions; freedom to move freely throughout the territory of India; freedom to reside in any part of the territory of India; freedom to acquire, hold and dispose of property; and freedom to practise any profession or to carry on any occupation or business. The other rights guaranteed to the citizens are right to equality; right to life and personal liberty; right to freedom of religion, right against exploitation, freedom to retain and nurture cultural and education rights of groups or sections of people; and right to constitutional remedies. There are restrictions on the enjoyment of each one of these rights by the citizens so as to see that the freedom that one enjoys does not, in any way, causes loss of it to another. Article 41 affirms the duty of the State to make effective provision for securing to the citizens, among other things, their right to education. Article 45 directs the State to create conditions for free and compulsory education to the children till they attain the age of 14 years. Article 39(b) and (c) directs the government to take steps to secure the distribution of ownership and control of the material resources of the community to subserve the common good and ensure that the operation of the country's economic system does not result in the concentration of the wealth and means of production to the common detriment. Under Article 43, there is a provision that the State should endeavour to secure by suitable legislation or economic organisation or in any other way, to all workers, agricultural, industrial or otherwise, a living wage, conditions of work ensuring a decent standard of life and full enjoyment of leisure and social and cultural opportunities. The state was in particular directed to endeavour to promote cottage industries on an individual or cooperative basis. Article 46 suggests that the educational and economic interests of SCs, STs and other weaker sections should be the special care of the State so as to protect them from social injustices and all forms of exploitation. The 73rd and 74th constitutional amendment Acts have ensured the meaningful people's participation at the local level. There are enactments including The Hindu Marriage Act, 1955 & the Special Marriage Act, 1955 The Dowry Prohibition Act, 1961; The Child Marriage Restraint Act, 1978; Factories Act, 1948; Maternity Benefit Act, 1961; The Commission of Sati (Prevention) Act, 1987; Supersession of Immoral Traffic, 1986 and The Indecent Representation of Women (Prohibition) Act 1986 for the protection of women. To protect the rights of children there are Child Labour (Prevention & Regulation) Act, 1986; The Mines Act, 1952; Plantation Labour Act, 1951; Juvenile Justice Act, 1986 ; Employment of Children Act, 1938 etc.

### **Welfare Schemes and Programmes of Weaker Sections**

Generally, the weaker sections face problems such as lack of income generating assets and resources, irregular income, complicated procedure to access to finances; non-availability of regular employment; disguised unemployment; low wages ; indebtedness; shortage of food and fodder; difficulties in getting safe drinking water; landlessness; lack of timely medical aid and inadequate health care; illiteracy and ignorance and lack of knowledge; cheating by middlemen and contractors; discrimination; non-payment of wages; lack of risk bearing capacity and mobility; absence of initiative; marketing problems; heavy expenditure on social ceremonies; low returns; natural calamities; unorganised efforts; indifferent attitude of officials; and lack of appropriate skills and managerial capabilities.

A large number of schemes and programmes have been launched by both the Union and State Governments with huge amount of budgetary allocations for the social sector which covered food



security, fertilizer subsidy MGNREGA, child development, drinking water and sanitation, Indira Awaas Yojana, maternal and child malnutrition and other state government programmes. Moreover, the social and welfare schemes include 20 point programme, backward classes schemes, child development schemes, disabled scheme, foreign contribution, labour and employment schemes, minorities scheme, rural schemes, social schemes, tribal schemes, urban schemes, voluntary schemes, women schemes, etc. The social schemes are: prohibition and drug abuse prevention scheme; Annapurna scheme; assistance to NGOs; CAPART sponsored, freedom fighters pension scheme, integrated programme for older persons, liberation and rehabilitation scheme; MPLADS, national social assistance programme; pradhan mantri jan dhan yojana; short stay homes; social defence scheme; socio-economic programme; SGSY etc. The schemes and programmes are good but their effective implementation has been the main problem.

Services like education, health and family planning, housing, urban development, labour welfare and welfare of backward classes have attracted a great deal attention of the Government and a considerable amount of plan funds was allocated in the plans for providing these services. These services are considered important to raise the low level of living of the poor and economically backward people. During the year 2012-13, the allocation was the order of Rs.306 lakh crore. It was followed by Rs.5.6 lakh crore budgetary allocation made for indirect and direct corporate tax concessions in 2013-14. For social services, in the First and Third plans there was allocation of 23 per cent and 24 per cent respectively. It has been observed that the outlay for social services had ranged between 15 to 20 per cent from the Second Plan to the Eighth Plan. But in the following Plans the percentage of total outlay was enhanced. For the Tenth Plan, it was 28.4 per cent which increased to 35.5 per cent in the Eleventh Plan. The allocation of Twelfth Plan has been 39 per cent for social services. In the recent budget 2016-17 of Rs.87,765 crore for rural sector, Rs.38,500 crore was allocated for MGNREGA. This allocation is Rs.55,000 crore in the budget 2018-19. A close examination of various provisions being implemented clearly indicates that tangible benefits could not accrue to the weaker sections. The services of civil society can be of great help in generation of awareness, motivation, facilitations, confidence building, providing requisite guidance, organizing the weaker sections and preparing them for fighting against the excesses.

### **ROLE OF CIVIL SOCIETY**

As there is an urgent need of empowering the weaker sections of our society, therefore, the role of civil society is considered necessary. No doubt, our Constitution has made requisite provisions for the protection of rights of the weaker sections and development thereof but these sections could not get due share in development cake and lagged behind due to one or the other reasons. The bureaucracy responsible for the delivery of goods and services could not get the desired success in serving the people because of strict adherence to rules, lack of commitment, indifferent and authoritarian attitude, inability to mobilise public support, tactics, corrupt practices, poor monitoring and evaluation, lack of effective participation of the people, etc. It is expected that the civil society can play vital role in improving the lot of deprived and weaker sections of the society.

### **EDUCATING THE BENEFICIARIES**

Mere enactments of various Acts for the welfare of weaker sections cannot serve the purpose. Most of the persons do not have adequate knowledge and information about the provisions of the Acts. They also lack awareness about the schemes and programmes of their development. The civil society can educate them about the features, objectives, provisions and procedure for getting the

benefits by arranging and disseminating knowledge and information through regular interactions, seminars, workshops and guide them to approach the concerned agencies and organisations. Also by extending the required help or assistance.

### **Building Pressure**

Civil society may formulate public opinion and build pressure to get the works done from the State and its agencies responsible for execution of schemes and programmes. Pressure can be exerted for getting the necessary changes incorporated in legislations, schemes and programmes to keep pace with the changing requirements. For this purpose, the civil society can organise the concerned persons or prospective beneficiaries. Their united actions will go a long way in getting the grievances if any redressed. They may raise their voice against those who try to violate or curb their rights. Civil society can defend the rights of the weaker sections by providing the support as and when the need arises. Thus, it safeguards individual rights and liberties.

### **Preparing People for Participation**

People participation broadens the thinking and helps in bringing socio-economic transformation. It can check social exploitation. Civil society prepares people for their active participation. It has been observed that the success of governance largely depends on the active participation of the people. Reservation has been provided to SCs, STs, BCs and women in both the urban and rural local governance institutions but still these categories of persons do not actively participate in their working. Civil society can motivate them and prepare them to actively participate in the affairs of the rural and urban local bodies. To achieve this mission, concerted efforts can be made by the civil society. The representatives can be trained and retrained as to how to deliberate in the meetings of the local bodies. It will develop self-confidence, self-reliance, competence, etc.

### **Ensuring Social Justice**

Social and economic justices involve distributive justice demanding removal of economic inequalities and rectifying the injustices resulting from dealing for transactions between unequal in society. The civil society itself should evaluate as to what extent real benefits of social justice have reached the target groups. Those who could improve their status and are not in the need, it should recommend their exclusion. Those who remained below expectation, their cases must be taken up and pleaded before the government to impart justice to them,

### **Addressing Social and Economic Issues**

It has been aptly pointed out that the rapid implementation of the social justice ideal has been impeded by still continuing stronghold of tradition and custom on society in India due to which social and economic laws and other modernising influences have been marginalised and recorded in the background. The economic liberalisation and privatisation policy implying opening of economy for investment of foreign capital and application of foreign technology by multi-national firms and business magnets is likely to widen the economic and cultural gap between the rich and the poor, the privileged and the under privileged and the so called elites and the masses, thus, hampering the cherished cause of social justice. Their implications must be understood and reforms can be suitably moulded for the benefit of poor and deprived sections of the society. Here emerges the role of civil society to take up the issues and matters with government to protect the interests of the weaker sections. It can advocate the right cause and compel the government not to go ahead

against the interests of the disadvantaged groups of the society. It may provide or suggest suitable alternatives.

### **Arranging Requisite Services**

The deprived and under-privileged sections of our society are in the need of requisite services which can be arranged by the civil society the requisite services include awareness generation, mobilisation, provision of grants-in-aid, health care, legal assistance, housing assistance, informal education, employment opportunities, availability of food and clothing, drinking water, means of communication, relief related services pertaining to natural and man-made calamities, financial assistance, etc. Such type of quality services definitely makes a dent and proves beneficial to the people.

### **Making Governance Responsive and Accountable**

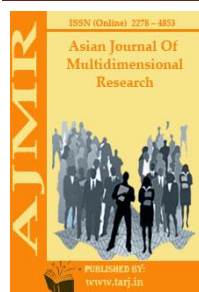
These days, all possible efforts are being made to make governance more and more responsive and accountable. The civil society is to act as a watch dog of public interests. It should ensure prevention of arbitrary exercise of state power, making the functionaries responsive, efficient and accountable through constant vigilance and, prompt action supported and backed by well formed public opinion.

### **CONCLUSION**

To conclude it can be said that the civil society has a pertinent role to play in the socio-economic development of the weaker sections. It is hoped that the sincere, dedicated, well-planned and systematic efforts of the civil society members can be of great use in tackling and solving the problems being faced by the deprived and under-privileged sections of the society. The development of SCs, STs, BCs, women, children, disabled, etc., can be ensured through efficient, effective and result oriented approach of the civil society. Impartial and constructive support on the part of policy-makers, planners and executors can boost the morale of the civil society members in their fight for protecting and safeguarding the rights of the target group.

### **REFERENCES**

1. UNDP ([www.undp.org/legal](http://www.undp.org/legal) empowerment site).
2. Civil Society Wikipedia.'
3. Centre for Civil Society, What is Civil Society? London School of Economics, 2004.
4. Skills, E., "The virtue of Civility," Tradition and Civil Society, Indian Apolis, Liberty Fund, 1997, pp, 320-21.
5. Nielson, K., "Reconceptualizing Civil Society for now" in M.Walzer, Towards a Global Civil Society, Providence, Berghahn Books, 1995, pp.41-67.
6. Ram, Sita, "Minority Rights, Indigenous People and, Human Rights." in Suresh Kumar Soni (Ed.), Human Rights Concept, Issues and Emerging Problems, Regal Publications, New Delhi 2007, p.108.
7. Pandey, Anurag, "Significance of Social Justice," in C.P.Barthwal (Ed.), Social Justice in India, Bharat Book Centre, Lucknow, 1998, pp. 68-69.



## IMPACT OF CULTURAL CLASH AND PARTICIPATION OF WOMEN IN 'SOME INNER FURY' BY KAMALA MARKANDAYA

**P. Jagadeeswari\***

\*PhD-Research Scholar,  
Hindusthan College of Arts and Science,  
Coimbatore, Tamilnadu, INDIA.  
Email id: jagasubhasri@gmail.com

### ABSTRACT

*Literature is mirror of Life, which beams boon and bane tricks in all and sundry's life. Language plays major role in the fictional field. Indian English is named for creative ideas emerged from English language by Indians. In the present milieu Indian English is being the intermediary for their civilizing literature and pretended to the Indo-Anglian Literature. To investigate the development of Indian English novel we must have to analyze each and every entity novelist into deliberation. From nook and corner of Indian Women writers in English, Kamala Markandaya was legendary writer in Indian fiction. As she was born in Brahman family, she learned conventional Hindu culture and values of women. Her comparatively unbound women characters like Roshan, Mira, Rani Manjula and Mohini were not only prevail over socio-cultural inhibition but still mount above the men in loftiness. From the beginning to the end, Kamala Markandaya works elucidate the contemporary women who prove them to be a challenging and ingenious as the earth. The optimistic outlook of these women is a triumph over of their inner power which can endure communal coercion. The power does not mean the physique but their intrinsic aptitude for empathy, sacrifice, nurturance and acceptance of the predictable. By analyzing periodically the experience of the Indian Woman, Markandaya depicts her as the mainstay of the society sustaining, escalation and durable every person just about her. Her novels were about to explain provincial ethnicity, traditions, cremation for the readers. She has used the technique called stream of consciousness to finalize the problem faced by female characters. Her concluding solution is everyone must cling to our cultural values and at the same time we should accept the best in Western culture.*

**KEYWORDS:** Culture, Power, Social, Sacrifice, Tradition And Conventions.

## INTRODUCTION

While existing in modern cultural century in the background of globalization and industrial encroachment, we are tempted to look back at the ancient times to levy its attainment in Indian English Literature and able to transmit them to the today's progress. Indian Literature is a trend of comprehensible and authorized terms, whereas Anglo-Indian Literature is regarded to be the amalgam products. The commands followed in Indian English Literature like techniques and linguistics were magnificent and steadily broadened out. The early writers like Mulkraj Anand, R. K. Narayan, Raja Rao, Bhamini Bhattacharya, Sir Aurobindo, Sarojini Naidu have created precious involvement to enhance Indian writing in English. The women-novelist after the world war-II began to come into view as flourishing novelist.

The current socio-economic, cultural and political setting have heaved to status be concentrate on for the welfare of women folk. Literature has at all times been focused to socio-political and cultural anxiety. In Post- colonial epoch many people were migrated from one country to the other – mostly to the land of colonist and covenant with ensuing subject like migrancy, hybridism, and loss of identity, multi-cultureless and vanishing of unyielding national identities. Globalization accelerated this practice and effected in the integrating of cultural live out and amplified advertising of culture during the arrival of Macdonald's and Pizza Huts in every municipal cities and through the merriment of exceptional days like Valentine's day, father's day etc. The immediate result of globalization found in the conurbation athwart the world which has out of the blue developed into multi-ethnic and multicultural.

Kamala Markandaya, Ruth Praver Jhabvala, Anita Desai, Nayantara Sahagal, Anita Chaudhari and a mass of others have further nap to it. The theme of poverty, hunger, disease, portrayal of social evils, inter-racial relations, the Indian national movements and the struggle from freedom, conflict between tradition and modernity are considered as the recurrent themes of Indian English novels. These themes are characterized by different techniques and ensign for varying cultural values and that lead to the flawlessness.

The novelist represents a woman from the archangel where no one blunders to guilt over her. It designates that Mira was Indian by spirit and compliments the Indian traditions and convention all through her education; she modified the realistic feelings in her life. What she did she desires a Westerner who displays straightforwardness and pleasures everyman on relation of compassion. She accentuates that she looks at firm humanitarian qualities in Richard; as an effect she plunges in love with him. She feels affection for Richard genuinely and he also acts in response her love in equivalent requisites.

Mira recognizes that it is the element of the educating which is fundamental prerequisite in her culture to nuptials. The coyness can be perceived on her countenance as is the natural world of an Indian woman whereas she goes to railway station to accept her brother and his friend Richard with the conventional zeal of Indian customs, she obtains a garland with her for her brother other than there she adorned it to Richard. This event of garlanding pointed out the very Indian way of life how they take care for a visitor. As she articulates: "...the first time we met I was so shy I hardly looked up until someone prodded me and I stumbled forward and garlanded him". (P-08)

Kamala Markandaya's characters have no range and intricacy. The choice of her characters is limited. Her characters are pragmatic and credible. Mira in *Some Inner Fury* is a strong character who passes through the most deplorable condition; but she never loses her daring and endurance. *Some Inner Fury* is a semi-autobiographical novel of Mrs. Markandaya. This story revolves



around a young woman who falls in love with an Englishman when India was fighting for independence. There is another duo undergoing a parallel ordeal in the novel, Kitsamy, the British Civil Servant and Premala, his traditional Hindu wife. This is an extrapolative of three strong female characters – Mirabai, Roshan and Premala who show evidence of exceptional and distinctive worth of adore and devotion, amity and sympathetic. Moreover Mira and Premala were educated so they were enough bold to take decision about their future. Mira loved Richard, an Englishman beside Govind's and her parent's desires and Premala take on a child against Kit's wishes. These are the tasks of cultural conflicts encountered by the female protagonists.

*Some Inner Fury* author depicts a nationwide icon and devoted perception in innumerable structure by presenting the peculiar receptivity of the contemporary cultured and progressive Indian woman. Indeed, similar to author, her woman character Roshan has a multi-ethnic attitude and gives the impression to be the really enlightened woman of present India. Mira and Roshan have secure resemblance and empathy with the entity westerners, a slightest by heart, in the political effort against Britain. Both of them love the Western ideals, yet they have a deep care for their mother country. Roshan forfeits her parents, husband and noble living at the altar of national fidelity and she goes to prison without hesitation. To Mira's uncertainty about her life in prison, she exclaims ardently: "What do you think? Of course, I am not sorry I would rather go to the devil my own than be led to heaven by anyone else...." Roshan plunk as a figure of new arousing among Indian women at some stage in the period of national great effort for freedom, who do not think consideration of benevolent up the soothe of their life for some dignified reason.

In fact this novel expresses about political argument that deals with the core of separating the human pursuit in 'east people' and 'west people'. This novel happens to seize the vicious fury of the nation which demolishes the misapprehension of agreement and bond between races and realm. Throughout the novel, Markandaya disputes against the war which packs every person with gloom and qualms and a sagacity of dreadful fury congregation athwart the seas. In a multifarious of frustrated passionate interaction the author depicts civilizing inequality and various societal metaphors which raze the ideas of many healthy planned youths who aim to prevent community, ethnic and civilizing discrimination.

Markandaya focuses adore and relationship on female leading role Mira, an Indian teenager and Richard, an Englishman in the milieu of India's freedom progression. Even if it extends the tender acme, hitherto it is urbanized with prudence and alertness. Nevertheless, Mira's affection for Richard is occupied with tenderness and greatness as Krishna Rao examines: Her inner fury is completely quenched when her love for Richard results in an ecstatic experience of the sweep and surge of love.(Krishna Rao,480) The last part of the novel leave Mira crammed with anguish, as she utters, "Still my heart wept, tearless, desolate, and silent to it". The emancipation faction may exterminate a hardly any folks, but it is unimportant in the superior national concern. Mira replicates at the end of the novel, but what subjects to the universe, I said to myself, if now and then a world is born or a star should die? Or what matter to the world if here and there a man should fall or a head or a heart should break.

Mira ruminates that individual fall or suffering is irrelevant in the event of a great cause. Through the character of Mira, a mentally I liberated woman, Kamala Markandaya highlights that individual victims do not reckon for a gracious reason. Mira gives up her love at the altar of nationwide allegiance. In the opening the zealous feel affection for Mira for Richard gives the impression to engrave across borders of loathing, but it eventually fall short because they fit in to



two dissimilar cultures or races of the leader and ruled. "...a chiffon sari colored like a rainbow and slippers with rhinestone heels, and a mouth as bright and vivid as a geranium petal- who was easily the most striking." (68)

In this novel, the author depicts a group of woman characters have forfeited their happiness for the autonomy of the nation. Their mental power expands authority over their male buddies. Woman is revealed responsible, devoted, mentally strong, qualitative and patriotic. Woman is expanded as Joan Adkins exactly points out that "resistance, rebellion, and death" provide the thematic structure of the novel and that wisdom is gained through suffering."(14)

Premala, one more female leading role plays a special kind of life. She is put on a pedestal girl who stands for Indian ethnicity and culture. She is depressed of love even surrounded by married life. She displays great endurance, the spirit of forfeit and love. Kit, her husband who is an Anglophile does not give back her approach of love. Her affection is cowed and is finally sublimated to the social basis; when she develops into a helping partner of an English Missionary Hicky in preserving a school in a village. Govind, an immense Indian revolutionary enlarges powerful love for her. Notwithstanding her counter to it from the central part of heart, this love does not blossom and she is scorched up inside the school by the Indians. Henceforth we discriminate the transformation of Kit, her husband, who atones but all in useless. He is also overwhelms by the fire of upheaval.

As Srinivasa Iyengar lectures, "Premala is symbolic of Mother India who is compassion and sufferance, which must indeed suffer all hurts and survive all disasters". In the course of her Markandaya ventures the bafflement and susceptibility of conventional Indian woman tackling a culture in instability. She is being the victim who attempts a Great Spirit full effort at saving the school on blaze probing her own life. Mira values her: "born in one world, educated in another, she entered both and moved in both with ease and nonchalance". She is definitely an outstanding human being.

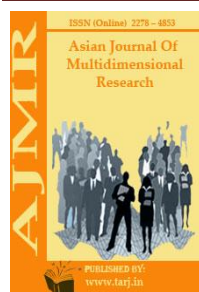
## CONCLUSION

To terminate it can be alleged that women's identity in India was stalled by an array of social tribulations in the pre-independence era. There is an extensive observation that the "communal harms" are more or less a product of autocracy of society and domineering system of living. Far ahead of its political framework, the novel is alluring to modern bookworms for its insightful and moving description of the potency of a woman harassed with forces further than her power. It is a narrative story about the pliability of the human courage and the magnitude of morals. This novel fight against misery and the problems are beaten with the acceptance, tolerance, optimistic and encouraging the modern opinion. As India is one of the best ever increasing economies in the world and wish for becoming a universal strength, necessitate to affectionate with the assault modernity whereas safeguard cultural values which does not barricade the women's uniqueness. The westernization has some influence to stamp out the social troubles and launch the women's personality in the 21st century. This will make a boulevard for governance of India in the digital era.

## Work CITED

1. K.R. Srinivas Iyengar, Indian Writing in English, (New Delhi: Sterling Publishers, 1983) p.440.
2. Adkins, journal of S. Asian Literature, 10, 1(Fall 1974), p.95.

3. H.M. Williams, Indo-Anglian Literature 1800-1970: A Survey. (Madras: Orient Longman, 1976) p.85.
4. Some Inner Fury by Kamala Markandaya , published by Penguin Book India, 2009.
5. Rao, A. V. Krishna. "Continuity and Change in the Novels of Kamala Markandaya." Perspectives on Kamala Markandaya. Ed. Madhusudan Prasad. Ghaziabad: Vimal, 1984. Print.



## ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN PROMOTING MEDICAL TOURISM IN INDIA

**Parneet Kaur\***

\*Assistant Professor,  
University College Moonak (Sangrur),  
Punjab, INDIA.  
Email id: gillparneet690@gmail.com

### ABSTRACT

*Medical tourism industry has recognized the benefits of integrating the information and communication technologies to facilitate information exchange between the patients and the health care providers to improve the medical tourism services. Health care institutions have transferred many of their services to their respective web sites to further the goals of promoting medical tourism in India. Therefore, the present study examines the role of information and communication technologies in promoting medical tourism in India. The study analyses the web sites of 3 JCI approved and 3 NABH accredited hospitals located in Punjab, based on 7 main dimensions and 15 sub-dimensions. The findings of the study reveal that, by providing a full range of services over the internet such as virtual tours of the hospitals, doctors' profile, video conferencing, self-diagnosis, telemedicine, etc., the hospitals of India are contributing a lot towards the promotion of medical tourism because the patients need not visit the hospitals personally for fixing their appointments or for consulting their doctors. The study suggests that the services provided by the hospitals over the web should be further improved in order to promote medical tourism in India.*

**KEYWORDS:** *Medical tourism, Information and Communication Technologies, Internet, Web sites, Hospitals, Services.*

## I. INTRODUCTION

Information and communication technologies (ICTs) are technologies that help gather, store, process and share information electronically. ICTs in healthcare include electronic medical records, medical journals and databases on the internet, video conferencing for doctor appointments, or systems on the internet.

Medical tourism industry has recognized the benefits of integrating the internet to facilitate information exchange between the patients and the health care providers to improve the medical tourism services. Health care institutions have transferred many of their services to their respective websites to further the goals of promoting medical tourism in India. The web sites of the hospitals provide numerous services to the medical tourists, which are helping a lot in the promotion of medical tourism, as the patients need not visit the hospitals personally for fixing their appointments or for meeting their doctors. Therefore, it has become necessary to examine the role of hospitals' websites in the promotion of medical tourism. Hence, the present chapter aims to analyze the web sites of the Indian hospitals.

Health information is extremely useful to empower patients for making important health decisions. Hospital web sites can be seen as encyclopedic information resources by providing a range of valuable health related information for patients preparing for an upcoming health care visit. As the hospital web sites are providing a number of services to the prospective patients, they are contributing in promoting medical tourism in India. Hence, the present study analyzes the services provided over the internet by six hospitals of India.

## II. REVIEW OF LITERATURE

**Bilsel et al. (2006)** affirmed that hospital web sites are significantly important to deliver health care services to working citizens living in metropolises that might not spare enough time to meet healthcare needs. The study developed a quality evaluation model for measuring the performance of hospital websites which consisted of seven major e-service quality dimensions including tangibles, reliability, responsiveness, confidence, empathy, quality of information, and integration of communication. **Laing and Weiler (2007)** identified that a number of factors have influenced the growth of medical tourism, including the high cost of medical procedures, long waiting lists, and ageing population in 'rich world' countries, greater affordability of flights and travel, and a shift in medical care away from the public sector, such that people are more comfortable with paying for medical services offered by private bodies or companies. **Moreno et al. (2009)** maintained that in the field of health, patients and their families demand to be involved in both medical decision making and actual care, so the web has become an important tool for online consumers of information and services. Therefore, the evaluation of the quality of health-related websites becomes relevant because it offers a potential to improve many health-related activities. **Lee (2010)** analysed the role of the health care sector in international tourism and the impact of international tourism on the state of health care in Singapore and found that the development of health care sector has positive effects on international tourism in the long-run. **Lunt et al. (2010)** affirmed that within the field of health care, the internet provides a range of options for accessing information relating to professional diagnosis, self-diagnosis, after-care and support. This includes the possibility of obtaining a second opinion; to allow the patient to access further information; to promote the purchase of diagnosis services and treatments; and the development of support groups around conditions. **Connell (2011)** described Medical Tourism as simply where and when patients travel overseas often over considerable distances, to take

advantage of medical treatments which are not available or easily accessible (in terms of costs and waiting time) at home. **Stolley and Watson(2012)** expounded that medical tourism is the idea of travelling for the purposes of obtaining health care or wellness services to save money on necessary surgeries (such as open-heart surgery) that are much cheaper abroad, or on elective procedures (such as cosmetic surgery or dental implants) that are not covered by medical insurance. **Oyelami et al. (2013)** adopted a research model having 21 items based on 6 constructs: Perceived usefulness, Perceived ease of use, Compatibility, Technical support and training, Internet self-efficacy, and Behavioural intention to use, to investigate Nigerians' Internet pattern usage, their awareness of, and factors influencing their use of the internet for self-care health information. The study revealed that the factors which were considered in using the internet for self-care included Perceived ease of use, Compatibility, Internet self-efficacy, and Technical support.

### III. OBJECTIVES OF THE STUDY

The study aims to achieve the following objectives:

1. To analyse the role of information and communication technologies in promoting medical tourism in India.
2. To make suggestions on the basis of the findings of the study to improve medical tourism in India.

### IV. RESEARCH METHODOLOGY

The present study is an attempt to highlight the role of internet in promoting medical tourism in India. For the purpose of achieving the objectives of the study, the services provided over the web sites of 3 JCI approved and 3 NABH accredited hospitals located in Punjab have been analysed. The web sites of these hospitals have been examined based on 7 main dimensions and 15 sub-dimensions. These dimensions have been chosen after reviewing various national and international studies relating to web site quality.

The names of the six hospitals and their respective web addresses are listed in table 1.

**TABLE 1 ANALYZED HOSPITAL WEB SITES**

| Hospital name                                     | Web Address  |
|---|--|
| 1. Fortis Hospital, Mohali                        | <a href="http://www.fortishealthcare.com">www.fortishealthcare.com</a> |
| 2. Satguru Partap Singh Apollo Hospital, Ludhiana | <a href="http://www.spsapollo.com">www.spsapollo.com</a>               |
| 3. Max Super Speciality Hospital, Delhi           | <a href="http://www.maxhealthcare.in">www.maxhealthcare.in</a>         |
| 4. Medanta-The Medicity, Gurgaon                  | <a href="http://www.medanta.org">www.medanta.org</a>                   |
| 5. BLK Super Speciality Hospital, Delhi           | <a href="http://www.blkhospital.com">www.blkhospital.com</a>           |
| 6. Artemis Hospital, Gurgaon                      | <a href="http://www.artemishospitals.com">www.artemishospitals.com</a> |

### V. RESULTS AND DISCUSSIONS

Health information is extremely useful to empower patients for making important health decisions. Hospital web sites can be seen as encyclopaedic information resources by providing a range of valuable health related information for patients preparing for an upcoming health care visit. As the hospital web sites are providing a number of services to the prospective patients,

they are contributing in promoting medical tourism in India. Hence, the present study analyzes the services provided over the internet by four hospitals of Punjab.

## **INTRODUCTION TO THE HOSPITALS**

### ***A. Apollo Hospitals***

Apollo Hospital was established in 1983. In the 30 years since, it has scripted one of the most magnificent stories of success that India has seen. Along the way the journey has touched and enriched 42 million lives that came from 120 countries. Apollo Hospitals was the forerunner of integrated healthcare in Asia, as well as globally. Today, the group's futuristic vision has ensured that it has been in a position of strength at every touch point of the healthcare delivery chain. Its presence encompasses over 10,000 beds across 64 hospitals, more than 2200 pharmacies, over 100 primary care & diagnostic clinics, 115 telemedicine units across 9 countries, health insurance services, global projects consultancy, 15 academic institutions and a Research Foundation with a focus on global clinical trials, epidemiological studies, stem-cell and genetic research.

Apollo started out with the promise of bringing quality healthcare to India at a price point that patients could easily afford. The cost of treatment in Apollo was a tenth of the price in the western world. The group has started several impactful programmes such as SACHi (Save a Child's Heart Initiative) - a community service initiative with the aim of providing quality paediatric cardiac care and financial support to children from underprivileged sections of society suffering from heart diseases. Apollo also runs the SAHI (Society to Aid the Hearing Impaired) initiative to help poor children with hearing impairment, and the CURE Foundation which is focused on cancer screening, cure and rehabilitation for those in need. In the area of Cancer care Apollo has also joined hands with Yuvraj Singh's YOUWECAN to organize massive cancer screenings. The Group actively leverages its telemedicine and mHealth capabilities to take its screening programmes to even remote corners of the country. Apollo Hospitals envisions for a new horizon - a future where the nation is healthy, where its people are fighting fit, and India emerges as the preferred global healthcare destination.

### ***B. BLK Super-Specialty Hospital***

BLK Hospital was founded by Dr. B L Kapur, an eminent Obstetrician and Gynecologist. He set up a Charitable Hospital in 1930 at Lahore. In 1947, he moved to post-partition India and set up a Maternity Hospital at Ludhiana. In 1956 on the invitation of the then Prime Minister, Dr. B L Kapur initiated the project for setting up a 200 bed hospital in Delhi. The hospital was inaugurated by the Prime Minister, Pt. Jawahar Lal Nehru on 2<sup>nd</sup> January, 1959. By 1984, when the hospital celebrated its silver jubilee, it was an expanding hospital well on its way to becoming Delhi's premier multispecialty institute. A factor of much importance to the hospital was the health of the community. Enthusiastic doctors held camps and public health talks to improve the status of community health in the area. In the late 1990s, the trustees of the hospital felt the need to upgrade it to a tertiary care hospital and tied up with Radiant Life Care Private Limited to re-develop and manage the facility. Today, a modern state-of-the-art tertiary care hospital has come up in place of the old hospital. It is one of the biggest stand alone private hospitals in the National Capital Region today.



### ***C. Medanta- The Medicity***

The Medanta hospital in Gurgaon was founded in 2009 by its Chairman and Managing Director Dr. Naresh Trehan. The hospital has 2.1 million sq. ft. campus that provides more than 1600 beds and houses facilities for more than 22 super specialities, all under one roof. Each floor is dedicated to a specialization to ensure that they function as independent hospitals within a hospital and yet have the comfort of collaborating on complex cases. Patients are provided with multiple options for treatment, the most suitable of which are arrived at through a cross-function, cross-specialization committee such as Tumor board that decides the best course of action.

### ***D. Max Healthcare***

Founded in 1985, Max India Limited is a public limited company listed in the NSE and BSE with over 37000 shareholders. In 2000, Max Med centre, Panchsheel Park-first med centre with facilities and day care surgeries was established. In 2002, max hospital Pitampura was established, which was the first hospital to be ISO certified and first high end secondary care centre in North Delhi. With over 1900 beds and 11 top hospitals in Delhi-NCR, Punjab and Uttarakhand, 2100 world class doctors and 9300 support staff, Max healthcare is one of the leading chains of hospitals in India. With 525 ICU beds and the most advanced technology, their state-of-the-art infrastructure is rated the best in North India thereby making Max Healthcare one of the best hospitals in India.

### ***E. Fortis Healthcare***

Brand Fortis was established in 1996 by founder chairman late Dr. Parvinder Singh, who instituted it with the vision *to create a world class integrated healthcare delivery system in India, entailing the finest medical skills combined with compassionate patient care.* Fortis Healthcare has grown from first hospital at Mohali (Chandigarh) to over 55 facilities today. These include the world famous Escorts Heart Institute and the erstwhile Wockhardt facilities. From North to South, East to West, Fortis truly has India covered - the frontier city of Amritsar, to Ludhiana, Mohali, the National Capital region, Mumbai, Bangalore, Mysore, Chennai, Kolkata and many more destinations are all home to Fortis facilities. Fortis occupies a place of pride in India's healthcare delivery system. Fortis Healthcare Limited is a leading integrated healthcare delivery service provider in India. The healthcare verticals of the company primarily comprise hospitals, diagnostics and day care specialty facilities. The company operates its healthcare delivery services in India, Dubai, Mauritius and Sri Lanka with 55 healthcare facilities (including projects under development), approximately 10,000 potential beds and 260 diagnostic centers. In a global study of the 30 most technologically advanced hospitals in the world, its flagship, the Fortis Memorial Research Institute (FMRI), was ranked no.2, by topmastersinhealthcare.com, and placed ahead of many other outstanding medical institutions in the world.

### ***F. Artemis Hospital***

Artemis Health Institute, established in 2007, is a healthcare venture launched by the promoters of the Apollo Tyres Group. Artemis is the first hospital in Gurgaon to be accredited by Joint Commission International (JCI). It is the first hospital in Haryana to get NABH (National Accreditation Board for Hospitals & Healthcare Providers) accreditation within three years of start up.

### Hospital Web Site Evaluation Criteria

Table 2 presents the Hospital Web Site Evaluation Criteria. It illustrates the seven main dimensions of Tangibles, Responsiveness, Reliability, Assurance, Empathy, Quality of Information, and Integration of Communication with their respective sub-dimensions on the basis which the websites of the hospitals have been analyzed.

**TABLE 2 HOSPITAL WEB SITE EVALUATION CRITERIA**

| Dimension                    | Criteria               | Definition  |
|------------------------------|------------------------|---|
| Tangibles                    | Presentation           | Web page is well organized and presented  |
|                              | Navigability           | Navigation on the web site is easy  |
|                              | Graphic Design         | Graphic design of the web site is attractive  |
| Reliability                  | Staff background       | Staff's background information, contact number, and email address are available   |
|                              | Hospital information   | Information about the hospital is complete  |
| Responsiveness               | Speed                  | Web site access is fast and the page is always available  |
|                              | Customer Care          | Automated or humane email-responses or serving pages give customers prompt service  |
| Assurance                    | Authority              | Webmaster and maintainer information is available on the web page   |
|                              | Privacy                | Users' privacy rights are clearly stated  |
| Empathy                      | Links                  | Web page contains accurate links to other health care related institutions  |
|                              | Quality of Information | Information contained on the web site is accurate and relevant  |
| Integration of Communication | Relevance              | Information contained on the web site is rich in content  |
|                              | Richness               | Information contained on the web site is rich in content  |
| Integration of Communication | FAQs and Help          | Relevant FAQs and help services allow patients to access required information rapidly   |
|                              | Special Services       | Hospital delivers special e-health services (e.g., online appointment, online patient visit, online access to test results, virtual tours) through its web site |

### Web Site Evaluation of Hospitals

Table 3 highlights the various services provided to the potential patients over the web sites of the six hospitals in India based on 7 main dimensions and 15 sub-dimensions.

**TABLE 3 WEB SITE EVALUATIONS OF HOSPITALS**

| Dimension   | Criteria            | 1* | 2** | 3*** | 4**** | 5***** | 6***** |
|-------------|---------------------|----|-----|------|-------|--------|--------|
| Tangibles   | 1. Presentation     | ✓  | ✓   | ✓    | ✓     | ✓      | ✓      |
|             | 2. Navigability     | ✓  | ✓   | ✓    | ✓     | ✓      | ✓      |
|             | 3. Graphic Design   | ✓  | ✓   | ✓    | ✓     | ✓      | ✓      |
| Reliability | 4. Staff background | ✗  | ✓   | ✓    | ✓     | ✓      | ✓      |
|             | 5. Hospital         |    |     |      |       |        |        |

|                              |                      |   |   |   |   |   |   |
|------------------------------|----------------------|---|---|---|---|---|---|
|                              | information          | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
|                              | 6. Services offered  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Responsiveness               | 7. Speed             | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
|                              | 8. Customer Care     | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Assurance                    | 9. Authority         | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ |
|                              | 10. Privacy          | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ |
| Empathy                      |                      |   |   |   |   |   |   |
|                              | 11. Links            | ✗ | ✗ | ✓ | ✓ | ✓ | ✗ |
| Quality of Information       | 12. Relevance        | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
|                              | 13. Richness         | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Integration of Communication | 14. FAQs and Help    | ✗ | ✗ | ✓ | ✓ | ✓ | ✗ |
|                              | 15. Special Services | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

1\* : Apollo Hospitals

2\*\* : BLK Super-Specialty Hospital

3\*\*\* : Medanta- The Medicity

4\*\*\*\* : Max Healthcare

5\*\*\*\*\*: Fortis Healthcare

6\*\*\*\*\*: Artemis Hospital

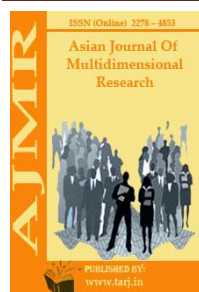
The results depict that the web sites of all these hospitals provide a number of services to the potential patients. However, the results reveal that among the six evaluated web sites, the web sites of the two hospitals: Fortis hospital and Max hospital fulfill all the website evaluation criteria. Through these web sites, the potential patients are well-informed about the hospital, i.e., hospital's location, medical procedures provided in that very hospital, kinds of equipments and technology used by the hospital, detailed information regarding the hospital staff, etc. The various queries of the potential patients are catered to and the patients need not visit the hospitals personally for fixing their appointments or for consulting their doctors as all these services are available on the hospitals' web site. Hence, the web sites of the hospitals are contributing a lot towards the promotion of medical tourism in India.

## CONCLUSION

It can be stated that Internet can be seen as an encyclopedic information resource by providing a range of valuable health related information for patients preparing for an upcoming health care visit which is contributing in the promotion of medical tourism in India. Hence, the present study examined the role of information and communication technologies in the promotion of medical tourism in India. The study analyzed the websites of six hospitals in India, based on 7 main dimensions of Tangibles, Responsiveness, Reliability, Assurance, Empathy, Quality of Information, and Integration of Communication with 15 sub-dimensions. The findings of the study revealed that by providing a full range of services over the internet such as information regarding the types of medical procedures, information regarding the doctors, hospital infrastructure, etc., the web sites of the hospitals are contributing a lot towards the promotion of medical tourism in India, as the patients need not visit the hospitals personally for fixing their appointments or for consulting their doctors. The results further suggested that the services offered on the hospitals' websites relating to the dimension of assurance, empathy and integration of communication can further be improved in order to enhance medical tourism in India.

**BIBLIOGRAPHY**

1. Connell, J.(2011), “Patients Without Borders”, *Medical Tourism*, pp 1-11.
2. Grönroos, C.(2011), “Value Co-creation in Service Logic: A Critical Analysis”, *Marketing Theory*, vol.11, no.3, pp 279-301.
3. Grönroos, C.(2011), “A Service Perspective on Business Relationships: The Value Creation, Interaction and Marketing Interface”, *Industrial Marketing Management*, vol.40, pp 240-247.
4. Grönroos, C.; and Ravald, A.(2011), “Service as Business Logic: Implications for Value Creation and Marketing”, *Journal of Service Management*, vol.22, no.1, pp 5-22.
5. Lee, G.C.(2010) “Health Care and Tourism: Evidence from Singapore”, *Tourism Management*, vol.31, pp 486- 488.
6. Loiacono, E.T.; Watson, R.T.; and Goodhue, D.L.(2002), “Webqual: A Measure of Website Quality”, *American Marketing Association*, vol.13, pp 432-438.
7. Lunt, N; Hardey, M. and Mannion, R.(2010), “Nip, Tuck and Click: Medical Tourism and the emergence of Web-based Health Information”, *The Open Medical Informatics Journal*, vol.4, pp 1-11.
8. Laing, J.; and Weiler, B.(2007), “Mind, Body and Spirit: Health and Wellness Tourism in Asia”, *Asian Tourism: Growth and Change*, pp 379-387.
9. Moreno, M.J.; Castillo, D.M.M.J.; Porcel, C; and Herrera-Viedma, E.(2009), “A Quality Evaluation Methodology for Health-Related Websites Based on a 2-tuple Fuzzy Linguistic Approach”, *Soft Comput*, vol.14, pp 887-897.
10. Oyelami, O.; Okuboyejo, S.; and Ebiye, V.(2013), “Awareness and Usage of Internet-based Health Information for Self-Care in Lagos State, Nigeria: Implications for Healthcare Improvement”, *Journal of Health Informatics in Developing Countries*, vol.7, no.2, pp 165-177.
11. Stolley, S. K.; and Watson, S.(2012), “Background and History”, *Medical Tourism: A Reference Handbook*, pp 1-31.
12. Sharma, A.(2013), “Medical Tourism: Emerging Challenges and Future Prospects”, *International Journal of Business and Management Invention*, vol.2, no.1, pp 21-29.
13. Tsai, W; and Ghoshal, S.(1998), “Social Capital and Value Creation: The Role of Intrafirm Networks”, *The Academy of Management Journal*, vol.41, no.4, pp 464-476.
14. Yang, Z.; Cai, S.; Zhou, Z.; and Zhou, N.(2005), “Development and Validation of an Instrument to Measure User Perceived Service Quality of Information Presenting Web Portals”, *Information and Management*, vol.42, pp 575-589.



## **POLITICS OF REGIONALISM IN JAMMU AND KASHMIR: CAUSES, IMPLICATIONS AND REMEDIES**

**Maqsood Hussain Para\***

\* Research Scholar,  
Devi Ahilya Vishwavidyalaya,  
Indore (M.P), INDIA.  
Email id: maqsoodps.para@gmail.com

### **ABSTRACT**

*The state of Jammu and Kashmir is a highly diverse geo-political entity created by the British East India Company in 1846, under colonial compulsions, with one of its main units- Kashmir valley- engulfed by a devastating conflict of India and Pakistan since last three decades. The state, since its accession to the Union of India in 1947, is facing various intra-provincial and intra-state upheavals. The multiplicity of its ethnic, religion-linguistic and more importantly regional character as well as growing identities and regional consciousness in its three regions Jammu, Kashmir and Ladhak had left a deep impact on over all politico-administrative setup of the state. Besides being a high stake conflict issue at world level, the growing agitations in the state is essentially a means of expression for pent up regional grievances. While alienation in Kashmir valley seeks an outlet in autonomy, secession, militancy, in Jammu its traditional vents have been communalism, integration and ultra-nationalism and in Ladhak it spreads in the form of separation from Kashmir region. The deeply diverse character of the state especially of regional nature makes it imperative to devise instruments and processes for restructuring the rules of the game so as to ensure that power sharing and development in the state is inclusive. Unless and until the regional aspirations of the three regions of the state are reconciled, there will always be pretexts of the conflict within the state as well as at national level. This paper is an attempt to underline the major issue of regional discontent in the state and also suggest the possible ways to arrest the conflict.*

**KEYWORDS:** *Regional Conflict, Power Sharing, Political Status, Accession, Regional Autonomy.*

## INTRODUCTION

Jammu and Kashmir is a landlocked hilly terrain, located close to the heart of Asia. The state with its present shape and boundaries came into existence with the Treaty of Amritsar concluded between Gulab Singh and British East India Company Government on 16<sup>th</sup> March, 1846. Before the Treaty of Amritsar the territories of Jammu, Kashmir and Ladhak were ruled by separate ruling arrangements and were, at times, harboring animosity among themselves, waging wars against each other for the purpose of expansion of their territories and controlling the routes and resources. It was only under the reign of Gulab Singh, a Jammu based warlord and the feudatory of Lahore based Sikh kingdom, that Jammu, Kashmir and Ladhak become a single political entity and came under one ruler. The Dogra state got divided in 1947 in an impending decolonization process and its parts came under the control of two newly carved dominions of the erstwhile British India-India and Pakistan. Presently the state of Jammu and Kashmir controlled by the Indian state consists of three regions namely Jammu, Kashmir and Ladhak, with nothing to share in common except a brief period of British colonial era and the post 1947 unified governing arrangements imposed over it. Therefore, owing to its composite culture with a distinct political and constitutional history, the state has assumed a unique shape and identity. It is perhaps the most diverse state in Indian subcontinent with striking physical and cultural heterogeneity. Diversities are so positioned in the state that an intricate social and political environment is generated with multiple layers and levels depicting a complex picture of the society. People of different regions in the state profess different faiths, follow different cultural traditions and speak different languages. It is a state of varied religions, classes, sects, ethnic and linguistic groups. The Jammu region is a mix of foothills and plains of Hindus, Muslims, Sikhs and speakers of various languages. The heart of Kashmir region is Kashmir Valley; the people are mostly Kashmiri speaking and Muslims with a Kashmiri Hindu and Sikh minority. The mountainous Ladhak region with very thinly populated is equally divided between majority Buddhists in Leh and Muslim dominated in Kargil. Region as mentioned by Rekha Chowdhary, a noted political analyst, is an important mark of identity in the state and cut across the religious continuity. (Chowdhary, 2010). There is no clear cut context of majority and minority in the state. Majority in one context becomes minority in another. After accession to India, and more specifically, from last four decades there remained certain contested areas of regional discontent between Jammu, Kashmir and Ladhak regions which had enormously impacted on the level and nature of development in the state and hindered an attempt of achieving greater degree of unity. Some of the most important issues of inter-regional discord in the state are discussed as under;

## ISSUES OF INTER-REGIONAL DISCORD

One of the most tabooed subject of politics of Jammu and Kashmir, but not less vital, is the inter-regional discord between its three principal regions. This discord is multi-layered encompassing different kinds of issues. The basic issues of the dispute between the three units include; political and ideological issues related to the political status and external affiliation of the state, developmental issue, mainly related to distribution of material resources and the issues relating to power sharing between three regions of the state. (Chowdhary, 2010). The internal politics of the state marked by inter-regional discontent has influenced the attitude and the political behaviour of people on the question of state's political status and external affiliation. In each of the three regions of the state, a different attitude on the issue of accession has been clearly observed from the very beginning of state's accession with Indian union and even before that. (Sharma & Manhas, 2014). While the majority of people in Jammu non-muslims including



some Muslims are in favour of complete merger of the state with the Indian Union, but the predominant Muslim majority in Kashmir, on the other hand, have either reservation with the quantum of accession or with the very accession to the Indian state in itself, who want to remain independent or in a state of greater autonomy. Since the transfer of power from the Dogra monarchy to the state's main political party National Conference, Jammu region's demands have been in two shapes. On the one hand, forces led by of Balraj Puri, a prominent socialist leaning political voice, had approved the special status under the leadership of Shiekh Abdullah's socialist agenda as articulated in the party manifesto of National Conference *Naya Kashmir*, but in addition they had demanded the devolution of political power of the Jammu and Kashmir state to the regions. On the other hand, a different set of demands had arisen with different communal overtones and quite different of earlier one. Led by Jammu Praja Parishad and backed by the Rightist elements in India, Jammuits have organized themselves beginning from 1947 to express its discontent against a loose relationship of the state with the Center and its perceived political disempowerment by Kashmiri politicians. One may also observe a symbiotic frequently mutually reinforcing relationship has developed between pro-integration Jammu group and valley's secessionists and pro-special status forces over the years. Two main parties in Jammu region has brought this symbiosis, Bhartiya Jan Sang (along with its Jammu based counter-part Praja Parishad) and since the mid 1970's, the Congress-I party. (Tremblay, 1992). According to their shared perception that India nation is one, its constitutional principles are applicable to all its citizens and no exception can be made on the basis of distinct identity, religious or otherwise. The Praja Parishad initiated the movement that the ruler of the Kashmir signed the instrument of accession which was generally accepted by Governor General of India, the state of Jammu and Kashmir become integral part of India. They favoured complete integration with India and abrogation of Article 370 of Indian Constitution (that grants special status to Jammu & Kashmir state), as both Jammu and Ladhak region took special status of state as a special favour to the Kashmir valley and therefore to the majority community of the state at the cost of minority. Their slogan was “*Ek Desh Mai Do Pradhan, Do Nishan, Do Vidhan, Nahi Chalaiga, Nahi Chalaiga*”. In Jammu the pro-integrationals launched this agitation under the demand “*Ek Vidhan, Ek Pradhan, Ek Nishan*” means one president, one constitution and one symbol. (Ahmad & Ahmed, 2017). However, by demanding the complete merger and integration of the state with the Indian union, they have directly challenged the *raison d'etre* of the Muslim- majority state with a Hindu majority India. (Tremblay, 1992). Moreover, Paishad opted for an objective that was never completely fulfilled and proved to be counter-productive. Instead of bringing Kashmir closer to the rest of India, it contributed to an emotional breach in Kashmir's ties with the national identity thereby engulfed the regional discontent in the state. This vicious circle of demands for 'full accession' (by pro-integration forces) and 'limited accession' (pro-autonomy forces) made the fact of accession of the state itself controversial. This also led the genesis of the movement of de-accession and Azadi in Kashmir. Parishad politics also split Jammu's personality on communal lines. Its opposition to land reforms and article 370 alienated *Harijans*, the major beneficiaries of the reforms, who believed that but for the special status of the state they would have been required to pay compensation for the land transferred to them. (Puri, 1983).

Besides the ideological stance around the political status of the state one more issue that remained at the core of regional discontent is related to power balance within the state. The agitational politics of Jammu and Ladhak region is mainly an elite response in the context of power politics of the state. There is deep-rooted feeling in both regions that there is lack of

political parity between the three regions of the state, while Kashmir is the dominant political partner, Jammu and Ladakh have neither equal share of power nor in a position to influence the decision making process. The politics of state have been so structured that power politics has been dominated by the Kashmiri political elite not only because of the fact that Kashmir region has a larger share in State Legislative Assembly, but also due to the fact that unlike the fragmented politics of Jammu region, Kashmir has been representing itself in more or less homogenous, with one party monopolizing the politics of Kashmir, leaving no scope for Jammu's political elite. (Chowdhary, 2010). However, such scenario got changed with the era of coalition politics in the state and by the emergence of Peoples Democratic Party as competitor to the National Conference. Fragmentation of Kashmiri political responses, its regional politics being divided between PDP, NC and to some extent INC since 2002 and consolidation of Jammu's political verdict in recent years brought Jammu for the first time in power scenario. Jammu's political elite since 2002 especially from 2014 are enjoying a greater share in the power politics of the state. This however, rather than subsiding the feeling of regional deprivation, has further sharpened the demand for regional parity. For example, one of the reasons cited by the Jammu centered BJP to end its coalition with the Kashmir based PDP in July 2018 was that the Jammu and Ladakh region were not given what was otherwise due to these provinces to flourish.

Like Jammu, the politics of Ladakh region has been marked by continued discontent against the power politics of the Kashmir's political elite. Since the very beginning, the Ladakh Buddhist Association has been perusing agitational politics against what they perceived as political domination of Kashmir and to some extent of the Jammu. While the demands ranging from greater resources and power for Ladakh to separation of Ladakh from Kashmir region. One of the more recent agitations led by Ladakh Buddhist Association took place in 1989. This agitation was focused on the widely prevalent feeling of neglect of Ladakh, its continued state of backwardness and underdevelopment. Inadequate basis of political representation, insufficient allocation of funds for the region and insufficient means of communication, educational facilities, tourism, irrigation and power projects etc. were the major issues raised by the agitation. Besides these issues, the agitation also raised issue of conspiracy of the Kashmir Muslim leadership to change the demographic character of the Ladakh, especially erosion of ethnic and cultural identity of Ladakhi's, neglect of Ladakhi language etc. (Chowdhary & Roa, 2003).

As regards the developmental issues, there is a general perception in Jammu and Ladakh that in the matters of planning, distribution of resources, state jobs and educational opportunities, the Kashmir centric government machinery of the state discriminates against both Jammu and Ladakh. Both the regions claim that the state government is taken to task for discriminating in its hiring policies in the State Secretariat, the Police, the Revenue Department, Higher Education etc. and also in political appointments. (Tremblay, 1992). However, since last few decades, there is a growing concern among Kashmiri Muslims that the Province of Jammu and Ladakh has taken a lion's share in the developmental allocations for there were lesser spending in the Valley due to its involvement in militant violence.

Overall, the regional responses indicating divergent political perceptions and diverse political aspirations provide a complexity to the politics of state. This complexity has been reflected in the electoral responses as well. There remained electoral polarization in the state since 1947 between Kashmir on the one hand and the regions of Jammu and Ladakh, on the other. This polarization took a clearly communal form in the decade of eighties and was clearly visible during the 1983 and 2014 Assembly elections. The concerns expressed about disparities in development by the

regions are, however, more based on perceptions rather than on hard facts since it has enormously helped the political parties to consolidate their respective constituencies. Needless to mention, therefore, that in order to remove the doubts among the peoples of these confronting regions, it is imperative to change the narrative of the politics in the state. No amount of the developmental allocations can remove the doubts unless the political players desist playing on the disparity card for pity electoral gains.

### **PROPOSED MODELS/PROPOSALS TO ARREST REGIONAL CONFLICT**

Since 1947 various efforts has been undertaken to resolve the issues of regional conflict between Jammu-Kashmir and Ladhak and to tackle the demand of regional autonomy. To address the issues of inter-regional discord and regional autonomy, the state government in the past has set up various commissions which include;

- (i). The Gajendragadkar Commission (1967)
- (ii). The Qadri Commission (1972)
- (iii). The Sikri Commission (1976)
- (iv). The Wazir Commission (1981)

While the commission appointed in 1972 and 1981 examined the demand for carving more districts in the state and the other two commissions recommended measures which could rectify the regional imbalances and harmonise inter-regional relations. Besides, these various models/proposals put forth by political analysts and political parties to harmonise regional tensions in the state are as under;

### **NATIONAL CONFERENCE REGIONAL AUTONOMY MODEL**

During the 1996 Assembly elections, the demand for regional autonomy acquired strong public support that all political parties irrespective of their political and ideological stands were forced to incorporate it in their electoral manifestos. Finally when the National Conference, came into power in 1996, it concentrated on its priority of deciding and negotiating a package of autonomy for the state and within the package of autonomy, the quantum of regional autonomy for the three regions of the state were also taken into active consideration. (Habibullah, 2008). In this connection a Regional Autonomy Committee was constituted by Dr. Farooq Abdullah on Nov. 13, 1996, with Farooq Abdullah as its chairman and Balraj Puri as its working chairman, to recommend ways and means for regional autonomy to the three regions of the Jammu and Kashmir state. The Regional Autonomy Committee submitted its twenty-five page report on April 13, 1999. The Committee felt that there is dire need of defining the regions/provinces in the state to achieve the twin objectives of self-governance and rapid social development because the prevailing classification of provinces/divisions was hampering the process of social/human development as well as democratic participation at the grass root level within the state. The committee in its report recommended two alternate models of autonomy within Jammu And Kashmir State. One was the formation of Regional/Provincial Councils and the other was setting up of District Councils. The first model seeks to reorganize the state into eight regions/provinces viz. Kamraz, Nunabad, Maraz, Chenab Valley, Jammu, Pir Panchal, Ladhak, Kargil to meet the requirements of devolution of power to different regions of the state. The second model recommended the setting up of District Councils as an alternative to the Regional/Provincial Councils which in coordination with panchayat raj institutions were supposed to work as

effective agents in supplementing the processes leading to faster pace of development. (Ahmad & Ahmed, 2017). Though both the models would have been proved as ideal system for meeting the aspirations of the people of either each region or each district but the way the committee recommended the reconstitution of regions or provinces raised many queries. The critics of the models were of the opinion that, if not in Kashmir valley, the regional autonomy pattern as envisaged by the committee can promote communal divide in the regions of both Jammu and Ladhak. The critics of the model also believe that the pattern as envisaged by the committee in its report is likely to sabotage the trifurcation of the state into three separate states on religious lines. (Chowdhary & Kumar, 2009).

### **BALRAJ PURI REGIONAL AUTONOMY MODEL**

Balraj Puri an eminent political analyst, social activist and columnist, prepared an alternative model of regional autonomy based on varied themes like political autonomy, cultural autonomy and financial autonomy. However, the model drafted by Balraj Puri was rejected by the government of Jammu and Kashmir in 1999. But Balraj Puri privately published his regional autonomy report in book form soon after his dismissal as working chairman of National Conference Regional Autonomy Committee. In his book he put forth the state's administrative and regional devolution in a manner that would preserve the state's unity and leave the present three regions of state essentially intact. Local autonomy was to be achieved by reinforcing Indian's well established panchayat raj system. His objective was to achieve decentralization of state power and enhanced institutional representation of ethno-linguistic minorities without at the same time further entrenching the communal identities of the three regions. Balraj Puri regional autonomy model takes panchayat raj as a sufficient effective instrument for ensuring inter group activity in Jammu and Kashmir and rejected the idea of increased convergence of the state's internal boundaries for equity among the different cultural group identities. Puri was in favour of extending the federal principle to the internal setup of the state without demarcating its regions. He suggested that the government bureaucracy and development agencies also to be decentralized as much as possible, to regional and sub-regional levels. (Puri, 1999). However, the model of regional autonomy put forth by Balraj Puri become controversial when it was found that without discussing the report with the committee members Mr. Puri went public on it and leaked it out to the press. Another limitation of the model is its sweeping recommendations of having a five tier system of governance ranging from state to panchayats. Its implementation would have in the ultimate analysis left the state government with no powers.

### **CHENAB VALLEY FORMULA**

Another substantial model proposed to end the regional grievances of the state is the Chenab Valley formula proposed in 1960's and gained importance after Parvez Musharraf, former president of Pakistan put forth his formula to resolve the Kashmir issue. It was proposed to meet the regional grievances of the state or to solve the Kashmir problem, which divides the Kashmir along the river Chenab, separating the Muslim majority areas from the Hindu and Buddhist one. If the said river will be made the new boundary, both Jammu and Kashmir will be partially autonomous.

### **BIFURCATION OR TRIFURCATION**

The idea of bifurcation or trifurcation of the state is yet another proposal on the subject. The issue of division of the state (with two states of Kashmir and Jammu for each and Union territory for Ladhak) has been there since 1947, suggested at different times by various political analysts

and leaders like Sardar Patel, Karan Singh, Sir Owen Dixon (United Nations Mediator), RSS and even Shiekh Abdullah, however for their divergent reasons. (Para, 2015). But by the recently concluded assembly election in the state and by the bifurcation of Telangana from Andhra Pradesh, the issue of bifurcation has assumed new significance. In Jammu, Jammu Mukhti Morcha was demanding and was formed with its sole aim of trifurcation of the state. Similarly, LAHDC passed a resolution seeking the status of union territory for the Ladhak region. The benefits put forth by the propounders of this proposal are administrative efficiency, a proper and fair distribution of resources, economic development, and satisfaction of regional aspirations and alteration of status quo. However, critics of bifurcation or trifurcation are of the view that the division of state is bound to complicate the situation further- for the simple reason that such a division would unleash the communal forces and instead of ethnic-regional divide between Kashmir-Jammu and Ladhak region, it would end up being the religious divide between the Muslim dominated Kashmir, Hindu dominated Jammu and Buddhist dominated Ladhak. (Chowdhary, 2015).

## CONCLUSION

To conclude we can say that the state of Jammu and Kashmir has been extensively affected by deep rooted historical, social and economic factors. Since independence the main issues in state have revolved round its status, inter-regional conflicts within the state and the relationship between state and central government, all of which inseparably connected. Despite the fact that the roots of conflict lie in Kashmir (being an international issue), the solution cannot come unless an internal consensus within the state is evolved and all three regions are actively involved in the process. There is an immediate need of re-looking at the issues of intra-regional discord, confront the political divergence, acknowledge the limits of exclusivity of any kind of identity politics and evolve some political consensus about the future of state. This requires a much needed internal dialogue involving the stakeholders of all the three regions. What is the need of hour is that the people of state need to be allowed to have inter-ethnic, inter-religious and inter-regional dialogue to develop consciousness to full-fill mutually antagonistic political aspirations of the people living in different regions of the state. The state needs a multi-layered package of autonomy that extends beyond the state to the regional and sub-regional levels. It is also imperative that the unitary character of the constitution of state needs to be amended to adopt regional devolution of powers so that the regional pulls and pushes of these regions can be addressed. Until and unless all these regions, especially Kashmir and Jammu join hands and set to work together the regional conflict would continue to mar their relations. Hence the need is to develop a democratic federal, plural and non-centralized type of model that alone can ensure harmony among diverse identities of the state and makes them a source of real strength and model for other states of India.

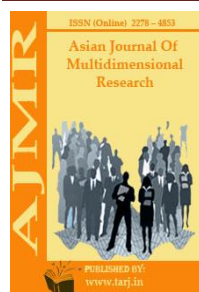
## REFERENCES

1. Ahmad, Showkat, & Ahmed, Mehboob, *Politics of Intra-Regional Identity and Regional Autonomy Models in Jammu and Kashmir*, IOSR Journal of Humanities and Social Science, Vol.22, Issue 9, Ver, 7, September: 2017, pp.78-90.
2. Bazaz, P. Nath (1941), *Inside Kashmir*, Srinagar, Kashmir Publishing Co.
3. Bazaz, P.Nath (2006), *Kashmir in Crucible*, Srinagar, Gulshan Books.
4. Behra, Navnita Chadha (2000), *State, Identity and violence: Jammu, Kashmir and Ladhak*, New Delhi, Manohar Publications.



5. Bose, Summantra (2003), *Kashmir: Roots of Conflict. Paths to Peace*, New Delhi, Vistaar Publications.
6. Bushan, Vidya (1985), *State Politics and Government: Jammu and Kashmir*, Jammu, Jay Kay Book House.
7. Chowdhary, Rekha, & Kumar, Ashutosh, *Regional Autonomy Committee Report for Jammu and Kashmir: A Critique*, Mainstream, August 12, 2000.
8. Chowdhary, Rekha, & Rao, V.N, *Jammu and Kashmir, Political Alienation, Regional Divergence and Communal Polarisation*, Journal of Indian School of Political Economy, Vol. 15 Nos. 1&2, June-January 2003.
9. Chowdhary, Rekha ed. (2010), *Identity Politics in Jammu and Kashmir*, New Delhi, Vitasta Publications.
10. Habibullah, Wajahat (2008), *My Kashmir Conflict and the Prospects of Enduring Peace*, United States, Institute of Peace.
11. Mandla, Sunita (2006), *Politics of State Autonomy and Regional Identity in J&K*, New Delhi, Kalpaz Publishers.
12. Om, Hari (1998), *Beyond the Kashmir Valley*, New Delhi, Har Anand.
13. Para, Altaf Hussain, *the Question of Bifurcation*, Greater Kashmir, January 8, 2015.
14. Puri, Balraj (1996), *Jammu: A clue to Kashmir Tangle*, Delhi.
15. Puri, Balraj (1999), *Regional Autonomy Committee Report*, Jammu, Jay Kay Book House.
16. Puri, Balraj (2008), *Kashmir Insurgency and After*, New Delhi, Oriental Logman.
17. Prakash, S. et.al. (2002), *Towards Understanding the Kashmir Crises: Internal Dynamics*, Jammu, Saksham Books International.
18. Tremblay, Reeta Chowdhary (1992), *Jammu: Autonomy within an Autonomous Kashmir*, in Thomas, Raju G.C, ed. (1992), *Perspectives on Kashmir: Roots of Conflict in South Asia*, Westview Press.
19. Sharma, Y.R (2002), *Political Dynamics of Jammu and Kashmir*, Jammu, Radhakrishnan Anand.
20. Sharma, Mamta & Manhas, Natasha, *the Story of Neglect of Jammu Region: An Analysis*, International Journal of Scientific and Research Publications, Vol. 4, Issue 10, October 2014.
21. Verma, P.S (1994), *Jammu and Kashmir at Political Crossroads*, New Delhi, Vikas Publications.
22. Wani, Gul Mohammad (2011), *Kashmir: Identity, Autonomy and Self-Rule*, Srinagar, Wattan Publications.
23. Zutshi, Chitralkha (2003), *Languages of Belonging, Islam, Regional Identity, and the Making of Kashmir*, New Delhi, Permanent Black.





## PERCEPTION ON IT AND IT'S DEPENDENCY UPON AGE OF USERS IN NORTH EASTERN MAHARASHTRA

Dr. Rajesh Kumar Kashyap\*; Dr. Anand G. Jumle\*\*

\*Professor (MCA)

Zeal Institute of Business Administration,  
Computer Application & Research.  
Pune, INDIA.

Email id: rajdlw@gmail.com

\*\*Principal,

SNDT Arts & Commerce College for Women,  
Pune, INDIA.

Email id: jumleanandg@gmail.com

### ABSTRACT

*Fast and being 1st for updated and live info nowadays has been thought of as an important want of today's society. To keep up the pace with this extremely moving and quick dynamical world, change within the news and information is that the want of the hour. It takes currently one day to become superannuated rather updated. Change with the planet with its news, development, creativity, social problems, national and international issues, social causes, community, learning, information sharing is turning into vital to everybody. Media, particularly Digital media has seen tremendous growth in past decades. There are several tools currently a days, one will update them. Latest news and sharing concepts helps United States of America to be told plenty regarding the planet around United States of America. Latest news and data helps United States of America to confirm that we tend to hold the direct compatibility with current trends, weather its world of fashion, economics, sports or varied different areas.*

**KEYWORDS:** *Information Age, Perception, Information Sources, Digital Media Networks, Social Media Habits, Modern Information Channels etc.*

## INTRODUCTION

Today is that the age of Technology. History has expertise a vast transformation within the past decades. Everything has modified. Turbulence is seen all over, from life-style to operating culture. Whether an individual could be a skilled, student, a wife or child; folks area unit forever busy, forever on the move. whether or not they area unit operating, or on the move, getting to faculty, looking or doing their own work, folks these days area unit forever busy 24/7 with all that we tend to currently face. It's a story once anyone still had the time to sit down back, relax and luxuriate in. The troubles and stresses of standard of living have modified everything. Then this question arises that if we tend to area unit thus busy then once to update ourselves? To carry the compatibility with this quick dynamical world, being updated is that the want of the hour. It takes currently one day to become superannuated rather updated. Updated with what? Change with the planet, with its events, its troubles and issues.

There are several tools currently days we are able to update ourselves. Sharing daily news and data is a method of being updated with the planet. Latest news and sharing concepts helps United States of America to be told plenty regarding the planet around United States of America. Latest news and data helps United States of America to confirm that we tend to hold the direct compatibility with current trends, whether its world of fashion, economics, sports or varied different areas. For a student of any skilled course, daily News and data plays an important role in their self-made career and it should additionally LED them keep with the present company trends. It'll additionally facilitate a lower classman to make a decision on what career stream to settle on.

Every day, we tend to tune up the tv to the news channel, we tend to scan newspapers to understand a lot of regarding the business and finance news, political news articles, current trends and general news, we tend to surf sites that have news articles so we area unit updated with the planet around United States of America.

Information today has been considered as a vital component of today's society. Organizations, which keeps information source in their primary development agenda, they are very competitive in nature and well organized with their ongoing experience and expertise. These organizations focus upon day-today business challenges and increase customer awareness by serving with innovative products or services; they excel in maintaining and managing customer relationships with their loyal customers, partners and suppliers. Information assists an organization in accurate decision making and delivering competitive advantage to the organization.

Dissemination of information and knowledge and creating reliable channels among the sources and receivers of the information is much important. Relying upon the traditional channels of information sources until past decade, the management of electronic resources has been an important aspect of the people today. We need resource experts who collect, analyze, evaluate, package and disseminate information to facilitate accurate decision-making processes.

Knowledge professionals have become the dominant force behind the developed organizations. It is the responsibility today entrusted upon all organizations to cuddle this need for managing knowledge. Because of the tremendous advances in technology, Cyber-world has completely transformed the today's world. Massive information is disseminated to people having different geographic location and culture. Today various sources of information are available. It can be newspapers, people, magazines, books, films, tapes etc. Sources are very important to disseminate reports, events, or issues and explain the world to your audience.

## **SOURCES OF INFORMATION**

From a knowledge management perspective, the available resources today create complexity for a student to think differently about the manner in which they learn whether it is inside or outside of the classroom. People get the information through various sources available. They are traditional sources as Newspaper, magazines, Television, radio etc., as well as modern channels viz. Facebook.

### **Internet as Mass Media**

The Internet has become the largest mass medium worldwide. It is ubiquitous. The traditional media's have also transformed themselves onto internet mostly newspaper and magazines are available over internet today. Not only does the Internet available between media and people but also established an easy channel for interpersonal communication. It offers a variety of free e-mail sites, portals, chat rooms and social networking sites.

### **Mobile Phones**

**Differing from the internet**, mobile as the mass media channel has also emerged as the new channel for information dissemination. SMS and other services have benefit to the Telecom Media. More importantly from the people's point-of-view, mobile phones are easily available than computers and can be used comfortably.

### **Social Media as Information Source**

Social media is that the use of web-based and mobile technologies to show communication into interactive dialogue. Social networking links folks with common interests. It's how for people to act and share info, information and concepts with others that share these common interests. A number of these interactions embrace e-mail, discussion teams, blogs, instant electronic communication, P2P networking and real time chat. A social network service basically consists of an illustration of every user (often a profile), his / her social links, and a spread of further services. Standard social networking sites area unit Facebook, Twitter, Bebo, Hi5, Sky rock, Orkut, Friendster, and LinkedIn etc.

The purpose of this research is to find out the importance of various information sources among the students, professionals, housewives, retired person, knowledge-workers and organizations.

## **OBJECTIVE OF STUDY**

Objective of this study is to test the perception of various users and knowledge seekers who belongs to various demographic groups towards different source of information. The study focuses upon the user's opinion upon various sources of information.

## **RESEARCH METHODOLOGY**

The study was descriptive in nature. All the dimensions are measured on Likert scale. Convenient sampling method was adopted for administering the questionnaires.

## **METHODS OF DATA COLLECTION**

Primary data was collected with the help of structured questionnaire circulated among 168 respondents in various part of North Eastern part of Maharashtra through which 100 fully furnished and reliable questionnaires has been selected for research purpose. Study was carried out in month of January this year. Chi Square test and frequency analysis were carried out by

using SPSS. Chi-square test was advocated to find out relations among the gender, qualification, age with users perception on various sources of information.

### Areas of Data Collection

The Data has been collected from various areas in Maharashtra viz. students and faculty members.

## DATA REPRESENTATION& ANALYSIS

### Frequency Tables

**TABLE-1: DEMOGRAPHIC DETAIL OF RESPONDENTS**

|  |         | Frequency | Percent | Valid Percent | Cumulative Percent |
|--|---------|-----------|---------|---------------|--------------------|
| <b>Age (In Years)</b>                              | 18-26   | 36        | 36.0    | 36.0          | 36.0               |
|  | 26-40   | 44        | 44.0    | 44.0          | 80.0               |
|  | 40+     | 20        | 20.0    | 20.0          | 100.0              |
|  | Total   | 100       | 100.0   | 100.0         |                    |
| <b>Gender</b>                                      | F       | 42        | 42.0    | 42.0          | 42.0               |
|  | M       | 58        | 58.0    | 58.0          | 100.0              |
|  | Total   | 100       | 100.0   | 100.0         |                    |
| <b>Qualification</b>                               | PG      | 43        | 43.0    | 43.0          | 43.0               |
|  | U-12    | 27        | 27.0    | 27.0          | 70.0               |
|  | U.G.    | 30        | 30.0    | 30.0          | 100.0              |
|  | Total   | 100       | 100.0   | 100.0         |                    |
| <b>Internet Usage (In Hours)</b>                   | >4      | 26        | 26.0    | 26.0          | 26.0               |
|  | 1-2     | 26        | 26.0    | 26.0          | 52.0               |
|  | 2-4     | 29        | 29.0    | 29.0          | 81.0               |
|  | < 1 Hr. | 19        | 19.0    | 19.0          | 100.0              |
|  | Total   | 100       | 100.0   | 100.0         |                    |
| <b>Time Spent Reading News Papers (In Minutes)</b> | 30-60   | 41        | 41.0    | 41.0          | 41.0               |
|  | <15     | 22        | 22.0    | 22.0          | 63.0               |
|  | >60     | 18        | 18.0    | 18.0          | 81.0               |
|  | 15-30   | 19        | 19.0    | 19.0          | 100.0              |
|  | Total   | 100       | 100.0   | 100.0         |                    |

Sources: Authors Compilation

**TABLE-2: MEDIUM EFFECTS THE PERCEPTION OF USERS**

| News Paper   |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|-------------------|-----------|---------|---------------|--------------------|
|              | Agree             | 16        | 16.0    | 16.0          | 16.0               |
|              | Disagree          | 14        | 14.0    | 14.0          | 30.0               |
|              | Neutral           | 14        | 14.0    | 14.0          | 44.0               |
|              | Strongly Agree    | 27        | 27.0    | 27.0          | 71.0               |
|              | Strongly Disagree | 29        | 29.0    | 29.0          | 100.0              |
| <b>Email</b> | Agree             | 21        | 21.0    | 21.0          | 21.0               |
|              | Disagree          | 25        | 25.0    | 25.0          | 46.0               |
|              | Neutral           | 21        | 21.0    | 21.0          | 67.0               |

|                                |                   |    |      |      |       |
|--------------------------------|-------------------|----|------|------|-------|
|                                | Strongly Agree    | 13 | 13.0 | 13.0 | 80.0  |
|                                | Strongly Disagree | 20 | 20.0 | 20.0 | 100.0 |
| <b>Internet Protocols</b>      | Agree             | 34 | 34.0 | 34.0 | 34.0  |
|                                | Disagree          | 19 | 19.0 | 19.0 | 53.0  |
|                                | Neutral           | 21 | 21.0 | 21.0 | 74.0  |
|                                | Strongly Agree    | 15 | 15.0 | 15.0 | 89.0  |
|                                | Strongly Disagree | 11 | 11.0 | 11.0 | 100.0 |
| <b>SMS</b>                     | Agree             | 25 | 25.0 | 25.0 | 25.0  |
|                                | Disagree          | 16 | 16.0 | 16.0 | 41.0  |
|                                | Neutral           | 17 | 17.0 | 17.0 | 58.0  |
|                                | Strongly Agree    | 33 | 33.0 | 33.0 | 91.0  |
|                                | Strongly Disagree | 9  | 9.0  | 9.0  | 100.0 |
| <b>Social Networking Sites</b> | Agree             | 35 | 35.0 | 35.0 | 35.0  |
|                                | Disagree          | 18 | 18.0 | 18.0 | 53.0  |
|                                | Neutral           | 25 | 25.0 | 25.0 | 78.0  |
|                                | Strongly Agree    | 17 | 17.0 | 17.0 | 95.0  |
|                                | Strongly Disagree | 5  | 5.0  | 5.0  | 100.0 |
| <b>Television</b>              | Agree             | 31 | 31.0 | 31.0 | 31.0  |
|                                | Disagree          | 7  | 7.0  | 7.0  | 38.0  |
|                                | Neutral           | 20 | 20.0 | 20.0 | 58.0  |
|                                | Strongly Agree    | 40 | 40.0 | 40.0 | 98.0  |
|                                | Strongly Disagree | 2  | 2.0  | 2.0  | 100.0 |
| <b>Radio</b>                   | Agree             | 39 | 39.0 | 39.0 | 39.0  |
|                                | Disagree          | 7  | 7.0  | 7.0  | 46.0  |
|                                | Neutral           | 31 | 31.0 | 31.0 | 77.0  |
|                                | Strongly Agree    | 23 | 23.0 | 23.0 | 100.0 |
|                                | Strongly Disagree | 0  | 0    | 0    | 0.0   |
| <b>Social Gathering</b>        | Agree             | 28 | 28.0 | 28.0 | 28.0  |
|                                | Disagree          | 19 | 19.0 | 19.0 | 47.0  |
|                                | Neutral           | 18 | 18.0 | 18.0 | 65.0  |
|                                | Strongly Agree    | 17 | 17.0 | 17.0 | 82.0  |
|                                | Strongly Disagree | 18 | 18.0 | 18.0 | 100.0 |

Sources: Authors Compilation

**TABLE-3: HYPOTHESIS TESTING**

| S. No. | Dimension                              | H <sub>0</sub> = Null Hypothesis   | X <sup>2</sup> | DF | Result at 10 % significance level |
|--------|--|--|----------------|----|-----------------------------------|
| 1      | Age * Internet Usage Hours             | Perception of users towards internet usage hours is independent of age             | 3.68           | 6  | Accept and Independent            |
| 2      | Age * Time Spent Reading News Paper    | Perception of users towards Time spent reading News Paper is independent of age    | 25.615         | 6  | Reject and Dependent              |
| 3      | Age * News Paper                       | Perception of users towards News paper is independent of age                       | 11.169         | 8  | Accept and Independent            |
| 4      | Age * E-Mail                           | Perception of users towards usage of E-Mail is independent of age                  | 10.891         | 8  | Accept and Independent            |
| 5      | Age * Internet Portals                 | Perception of users towards usage of Internet Portals is independent of age        | 8.486          | 8  | Accept and Independent            |
| 6      | Age * SMS                              | Perception of users towards usage of SMS hours is independent of age               | 5.519          | 8  | Accept and Independent            |
| 7      | Age * Social Networking Sites          | Perception of users towards usage of Social Networking sites is independent of age | 7.118          | 8  | Accept and Independent            |
| 8      | Age * Television                       | Perception of users towards usage of Television is independent of age              | 7.951          | 8  | Accept and Independent            |
| 9      | Age * Radio                            | Perception of users towards usage of Radio is independent of age                   | 3.705          | 8  | Accept and Independent            |
| 10     | Age * Social Gathering                 | Perception of users towards Social Gathering is independent of age                 | 6.944          | 8  | Accept and Independent            |
| 11     | Gender * Internet Usage Hrs.           | Perception of users towards internet usage hours is independent of Gender          | 4.26           | 3  | Accept and Independent            |
| 12     | Gender * Time Spent Reading News Paper | Perception of users towards Time spent reading News Paper is independent of Gender | 1.992          | 3  | Accept and Independent            |
| 13     | Gender * News Paper                    | Perception of users towards Newspaper is independent of Gender                     | 3.383          | 4  | Accept and Independent            |
| 14     | Gender * E-Mail                        | Perception of users towards usage of E-Mail is independent of Gender               | 6.966          | 4  | Accept and Independent            |
| 15     | Gender * Internet Portals              | Perception of users towards usage of Internet Portals is independent of Gender     | 2.151          | 4  | Accept and Independent            |
| 16     | Gender * SMS                           | Perception of users towards usage of SMS hours is independent of Gender            | 0.915          | 4  | Accept and Independent            |
| 17     | Gender * Social                        | Perception of users towards usage of   | 1.762          | 4  | Accept and                        |



|    |   |  |        |   |                        |
|----|---|--|--------|---|------------------------|
|    | Networking Sites                              | Social Networking sites is independent of Gender                                 |        |   | Independent            |
| 18 | Gender * Television                           | Perception of users towards usage of Television is independent of Gender         | 8.757  | 4 | Reject and Dependent   |
| 19 | Gender * Radio                                | Perception of users towards usage of Radio is independent of Gender              | 2.516  | 4 | Accept and Independent |
| 20 | Gender * Social Gathering                     | Perception of users towards Social Gathering is independent of Gender            | 5.228  | 4 | Accept and Independent |
| 21 | Qualification * Internet Usage Hours.         | Perception of users towards internet usage hours is independent of Qualification | 11.714 | 6 | Reject and Dependent   |
| 22 | Qualification * Time Spent Reading News Paper | Perception of users towards internet usage hours is independent of Qualification | 9.135  | 6 | Accept and Independent |
| 23 | Qualification * News Paper                    | Perception of users towards internet usage hours is independent of Qualification | 8.293  | 8 | Accept and Independent |
| 24 | Qualification * E-Mail                        | Perception of users towards internet usage hours is independent of Qualification | 16.85  | 8 | Reject and Dependent   |
| 25 | Qualification * Internet Portals              | Perception of users towards internet usage hours is independent of Qualification | 8.49   | 8 | Accept and Independent |
| 26 | Qualification * SMS                           | Perception of users towards internet usage hours is independent of Qualification | 9.03   | 8 | Accept and Independent |
| 27 | Qualification * Social Networking Sites       | Perception of users towards internet usage hours is independent of Qualification | 8.89   | 8 | Accept and Independent |
| 28 | Qualification * Television                    | Perception of users towards internet usage hours is independent of Qualification | 9.373  | 8 | Accept and Independent |
| 29 | Qualification * Radio                         | Perception of users towards internet usage hours is independent of Qualification | 3.345  | 8 | Accept and Independent |
| 30 | Qualification * Social Gathering              | Perception of users towards internet usage hours is independent of Qualification | 4.098  | 8 | Accept and Independent |

**Sources:** Authors Compilation

## FINDINGS

Today popularity of internet and its usage is increasing for various purposes and been used by everyone based upon their requirement. Newspaper still is the best source of information and mostly popular among the old ages. New generation is adopting new sources for information

dissemination, which is fast and reliable viz., SMS and social networking sites. Social networking sites are becoming popular among every individual.

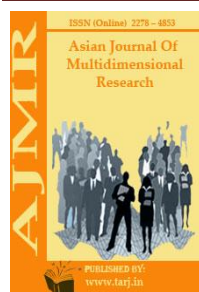
Popularity of social networking sites has been increased among all the age groups and being used for various information purposes. Presence over social networking sites is independent of age, gender and location. New technological advances are becoming popular among all the groups of society. Social networking sites are the most useful tool to get in touch with friends and community.

## CONCLUSION

Today, Social networking sites are getting more popular among all the ages and groups and its becoming a good source of information sharing beyond other digital and print media resources. People are becoming habituated towards usage of these new technologies for the dialogues while on the move. These technologies have given greater flexibility to the users to disseminate information among their group.

## REFERENCES

1. Castells, Manuel. (1996). *The Rise of the Network Society: The Information Age. Economy, Society and Culture*, 1. Cambridge, MA: Oxford University Press.
2. Hillery, George A. (1966). *Definitions of Community: Areas of Agreement. Rural Sociology*.
3. Kiesler, Sara, Jane Siegel, & Timothy, W. Mcguire. (1984, October). Social Psychological Aspects of Computer Mediated Communication. *American Psychologist*.
4. Menzel, Herbert. (1966). Information Needs and Uses in Science and Technology. *Annual Review of Information Science and Technology*, 1, 41-69. Interscience Publishers.
5. Paisley, William J. (1968). *Information Needs and Uses.* *Annual Review of Information Science and Technology*, 3, 1-30. Chicago: Encyclopedia Britannica, Inc.
6. Taylor, Robert S. (1962, October). The Process of Asking Questions. *American Documentation*, 13(4), 391-396. Retrieved from DOI: 10.1002/asi.5090130405.
7. Tversky, A., & Kahneman, D. (1981, January). The Framing of decisions and the Psychology of Choice. *Science*.
8. Wilson, T. D. (1981). On User Studies and Information Needs. *Journal of Documentation*, 37(1), 3-15.
9. Bulik, B. (2009, April 13). What'll be the breakout star that links TV to Net? Retrieved on 2009, April 22 from [http://adage.com/article?article\\_id=135949](http://adage.com/article?article_id=135949)
10. Retrieved on 2013, October 1 from [http://en.wikipedia.org/wiki/Information\\_needs](http://en.wikipedia.org/wiki/Information_needs)
11. Retrieved from [http://en.wikipedia.org/wiki/Information\\_source](http://en.wikipedia.org/wiki/Information_source)
12. Retrieved from <http://www.csu.edu.au/student-services/my-studies/learning/eval>
13. Retrieved from [http://www.thenewsmanual.net/Manuals%20Volume%203/volume3\\_59.html](http://www.thenewsmanual.net/Manuals%20Volume%203/volume3_59.html)



## EDUCATING CULTURALLY DISADVANTAGED STUDENTS: ATTITUDE OF PROSPECTIVE TEACHERS

Roopa Gopal V \*; Prof. (Dr.) P.K. Aruna \*\*

\*Research Scholar,  
Department of Education,  
University of Calicut, INDIA.  
Email id: roopagopl449@gmail.com

\*\*Professor,  
Department of Education,  
University of Calicut, INDIA.  
Email id: Pkaruna12@yahoo.com

### ABSTRACT

*The present study aims to find out the Attitude of Prospective teachers towards Education of Culturally Disadvantaged Students in Malappuram and Kozhikode Districts. Today's Prospective teachers are the social engineers of coming era. Their attitude towards education and students can make a revolution in the current educational system. Survey method has been used for the study. Representative sample of 120 prospective teachers were selected by random sampling technique. The tool used for the study was Scale of attitude towards education of culturally disadvantaged students prepared by the investigators. The statistical techniques used were test of significance of difference between means and percentage analysis. The findings of the study revealed that there is no significant difference between the attitude of male and female prospective teachers towards education of culturally disadvantaged students. 18% of prospective teachers have high positive attitude towards the education of culturally disadvantaged students and 63% prospective teachers have moderate positive attitude towards the education of culturally disadvantaged students.*

**KEYWORDS:** *Culturally Disadvantaged Students, Attitude, Prospective Teachers,*

## INTRODUCTION

*“A teacher is not only the nuclei of the education system, but is also the backbone of the system and the success or failure of this system depends to a large extent on the community of teachers.”*

**-Mahatma Gandhi**

The word ‘teacher’ represents knowledge; transfer of the knowledge from the teacher to the taught. In fact, the foundation that builds a person in life is to great extent based on the knowledge he gets from his teacher (“Innovative Education Technology Company | Foradian,” n.d.). According to American commission on teacher education (1974), “The quality of a nation depends upon the quality of its citizens and the quality of its citizen depends upon the quality of their education. Further, the quality of their education depends more than any other single factors, upon quality of their teachers.” Teachers can construct or destruct the society. Teacher’s personality, behaviors, interests and attitude affects the student’s behavior pattern and thus ultimately shape their personality (NPE) (“npe86.pdf,” n.d.). Proper training and sincere effort to improve themselves can only make a teacher perfect. (“ch-1.pdf,” n.d.). Prospective teachers, also known as teacher candidates, “the term is used to describe those who are enrolled in a teacher preparation program and working toward teacher certification. They complete supervised field-based teaching experiences with the support and mentorship of university” (“What is student teachers). They are the future teachers. Hence they can make a great influence on future generation. Their knowledge, attitude, abilities, etc can change the student’s whole behavior. In the present study, the term prospective teachers are used to indicate the B. Ed students. Children belonging to disadvantaged groups include children from SC/ST, and other socially and educationally backward categories based on cultural, economical, social, geographical, linguistic, gender or other categories that the appropriate governments can separately notify (“Right To Education,” n.d.). Special care should be taken for the educational advancement of students from these sections. Teachers should play a crucial role for educational advancement of students of this group. The present study aimed to find out the attitude of Prospective teachers towards Education of Culturally Disadvantaged Students.

Ross-Hill (2009) conducted a study on Teacher attitude towards inclusion practices and special needs students. The study revealed that majority of the teachers supports the inclusive practices in regular classrooms. Some teachers showed neutral attitude towards the practice of inclusion as it relates to teaching assignment. (“teachers attitude towards inclusion - Google Scholar,” n.d.) Avramidis, Bayliss & Burden (2000) conducted a Survey into Mainstream Teachers' Attitudes towards the Inclusion of Children with Special Educational Needs in the Ordinary School in one Local Education Authority. Their study emphasis the need of professional development courses for teachers for developing a positive attitude towards inclusion. Study also revealed that university graduated teachers have more positive attitude towards inclusion. (Avramidis, Bayliss, & Burden, 2000). Hastings & Oakford (2010) conducted a study on Prospective teachers' Attitudes towards the Inclusion of Children with Special Needs. The study showed that prospective teachers were more negative about the impact of children with emotional and behavioural problems on other children, teachers, and the school environment than they were about children with intellectual disabilities. (Hastings & Oakford, 2003). Many studies were conducted in the field of inclusive education and teacher’s attitude towards inclusive education. But a little study was conducted in the field of attitude of prospective teachers towards education of culturally disadvantaged students.

## **OBJECTIVES OF THE STUDY**

The present study has the following objectives:

1. To compare the mean scores of variable Attitude towards the education of culturally disadvantaged students between the samples of male and female prospective teachers in Malappuram and Kozhikode districts.
2. To find out the level of Attitude towards the education of culturally disadvantaged students among prospective teachers in Malappuram and Kozhikode districts.

## **HYPOTHESES OF THE STUDY**

1. There will be significant difference in the mean scores of the variable Attitude towards the education of culturally disadvantaged students between the samples of male and female prospective teachers in Malappuram and Kozhikode districts.

## **METHODOLOGY**

Survey method is used for the study.

A sub set of the population selected for the observation and analysis is called a sample. The representative samples of 120 prospective teachers were selected by the random sampling technique from various teacher education colleges in Malappuram and Kozhikode districts.

## **TOOL USED FOR THE STUDY**

**Scale of attitude towards education of culturally disadvantaged students (Roopa & Aruna, 2017).**

The final scale consists of 26 items under the three dimensions of scale of attitude towards education of culturally disadvantaged students. They are, Attitude towards persons belongs to culturally disadvantaged group, attitude towards inclusion of students belong to culturally disadvantaged group and personal concerns of teachers towards students belong to culturally disadvantaged group. The Scale of attitude towards education of culturally disadvantaged students has been validated by construct validity and it has also face validity. The reliability is established by split half method and the reliability coefficient is 0.67.

## **STATISTICAL TECHNIQUES USED**

The following statistical techniques were used for the analysis of data.

1. Descriptive statistics
2. Percentage Analysis
3. Test of significance of difference between means for large independent sample (Garrett, 1981).

## **ANALYSIS**

### **Preliminary Analysis**

The statistical constants such as Mean, Median, Mode, Standard Deviation, Skewness, and Kurtosis of Attitude towards education of culturally disadvantaged students are presented in table 1.

**TABLE 1**  
**DETAILS OF THE STATISTICAL CONSTANTS OF THE VARIABLE ATTITUDE TOWARDS EDUCATION OF CULTURALLY DISADVANTAGED STUDENTS IN MALAPPURAM AND KOZHIKODE DISTRICTS.**

| Variable  | Mean  | Median | Mode | SD   | Skewness | Kurtosis |
|---|-------|--------|------|------|----------|----------|
| Attitude towards education of culturally disadvantaged students | 55.46 | 55     | 55   | 7.71 | -0.296   | 0.746    |

From the table 1, it can be seen that, the statistical constants of variable are close approximation to values expected for normal distribution. The distribution can be approximated to normality and is only very slightly skewed.

### PERCENTAGE ANALYSIS

**The level of student teacher's Attitude towards education of culturally disadvantaged students**

In this section the percentage of student teacher's Attitude towards education of culturally disadvantaged students are found out and are given in the table 2.

**TABLE 2**  
**DETAILS OF LEVEL OF STUDENT TEACHER'S ATTITUDE TOWARDS EDUCATION OF CULTURALLY DISADVANTAGED STUDENTS**

| Variable  | No. of total students | Level of scores | Student teacher's No. | % of sample |
|---|-----------------------|-----------------|-----------------------|-------------|
| Attitude towards education of culturally disadvantaged students | 120                   | Low             | 23                    | 19.17       |
|   |                       | Average         | 75                    | 62.5        |
|   |                       | High            | 22                    | 18.33       |

Table 2 shows that, for the total sample of prospective teachers, 19.17% of prospective teachers having low Attitude towards education of culturally disadvantaged students. 18.33% of prospective teachers have high Attitude towards education of culturally disadvantaged students. 62.5% prospective teachers are having average Attitude towards education of culturally disadvantaged students. It is shown in the figure 1



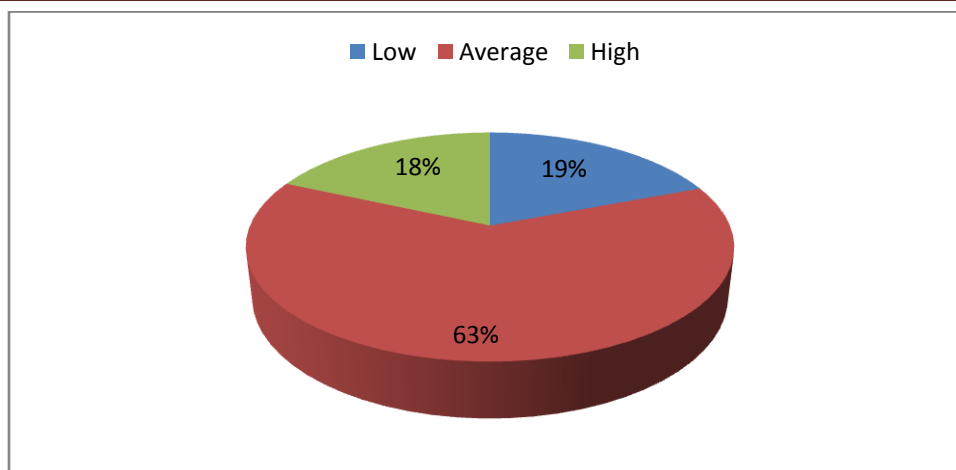


Figure 1. The figure showing levels of Student teacher's Attitude towards education of culturally disadvantaged students.

### RESULTS OF MEAN DIFFERENCE ANALYSIS

The details of test of significance of difference between means used to study variable Attitude towards education of culturally disadvantaged students between comparable samples of male and female prospective teachers are given in table 3

**TABLE 3**  
**DETAILS OF MEAN SCORES OF ATTITUDE TOWARDS EDUCATION OF CULTURALLY DISADVANTAGED STUDENTS BETWEEN COMPARABLE SAMPLES OF MALE AND FEMALE PROSPECTIVE TEACHERS.**

| Sl. No | Nature of variable  | Sub sample | Number of sample | Mean        | Standard Deviation | Critical Ratio |
|--------|---|------------|------------------|-------------|--------------------|----------------|
| 1      | Attitude towards education of culturally disadvantaged students | Male       | N1<br>36         | X1<br>54.61 | $\sigma$ 1<br>8.29 | 0.79           |
|        |   | Female     | N2<br>84         | X2<br>55.82 | $\sigma$ 2<br>7.47 |                |

From the above table it is clear that there no significant difference exist in the mean scores of Attitude towards education of culturally disadvantaged students for the samples of male and female prospective teachers. The obtained critical ratio, 0.79, is not significant at 0.01 or 0.05 level. The high mean score is associated with female teacher students.

### Component wise mean difference analysis of responses of attitude towards culturally disadvantaged students

The details of test of significance of difference between means used to study the components of the variable Attitude towards education of culturally disadvantaged students between comparable samples of male and female prospective teachers are given in table 4.

**TABLE 4**  
**DETAILS OF MEAN SCORES OF COMPONENTS OF ATTITUDE TOWARDS**  
**EDUCATION OF CULTURALLY DISADVANTAGED STUDENTS BETWEEN**  
**COMPARABLE SAMPLES OF MALE AND FEMALE PROSPECTIVE TEACHERS.**

| Sl. No | Components  | Sub sample | Number of sample | Mean        | Standard Deviation | Critical Ratio |
|--------|---|------------|------------------|-------------|--------------------|----------------|
| 1      | Attitude towards persons belongs to culturally disadvantaged group                      | Male       | N1<br>36         | X1<br>21.13 | $\sigma$ 1<br>3.71 | 1.78           |
|        |   | Female     | N2<br>84         | X2<br>19.83 | $\sigma$ 2<br>3.65 |                |
| 2      | Attitude towards inclusion of students belong to culturally disadvantaged group         | Male       | N1<br>36         | X1<br>16.80 | $\sigma$ 1<br>2.74 | 2.51**         |
|        |   | Female     | N2<br>84         | X2<br>18.08 | $\sigma$ 2<br>2.41 |                |
| 3      | Personal concerns of teachers towards students belong to culturally disadvantaged group | Male       | N1<br>36         | X1<br>16.66 | $\sigma$ 1<br>2.59 | 2.52**         |
|        |   | Female     | N2<br>84         | X2<br>17.89 | $\sigma$ 2<br>2.38 |                |

\*\* Significant at 0.01 level

The above table shows that there no significant difference exist in the mean scores of the component Attitude towards persons belongs to culturally disadvantaged group for the sub samples of male and female prospective teachers. The obtained critical ratio is 1.78, which is not significant at 0.01 or 0.05 level. For the components Attitude towards inclusion of students belong to culturally disadvantaged group and Personal concerns of teachers towards students belong to culturally disadvantaged group, the obtained critical ratios are 2.51 and 2.52 respectively. The value is significant at 0.05 level. For both the components, high mean scores are associated with female samples.

### CONCLUSION

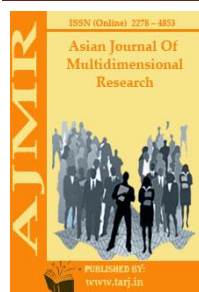
The percentage analysis result shows that 18% of the prospective teachers have high positive attitude and 63% of the prospective teachers have moderate positive attitude towards the education of culturally disadvantaged students. This result is in agreement with the study of Ross-Hill (2009). Which says that majority of the teachers support the inclusive practices in classrooms. The test of significance of difference between means reveals that there is no significant difference exists between the attitude of male and female prospective teachers towards education of culturally disadvantaged students in Malappuram and Kozhikode districts. From this study it can be concluded that majority of the prospective teachers have positive attitude towards the education of culturally disadvantaged students.

## EDUCATIONAL IMPLICATION

All the teachers should have a positive attitude towards inclusion. Only with that the real aim of inclusive education can be obtained. Now inclusive education is a part of B. Ed curriculum. Teacher educators should ensure that the real essence of inclusion reached to their students. Train them different inclusive practices. Teachers should attend different in service refresher courses and training programmes for updating their knowledge. Government and other organizations should conduct such classes, which will help to improve the teacher's attitude towards inclusion.

## REFERENCES

- Avramidis, E., Bayliss, P., & Burden, R. (2000). A Survey into Mainstream Teachers' Attitudes Towards the Inclusion of Children with Special Educational Needs in the Ordinary School in one Local Education Authority. *Educational Psychology*, 20(2), 191–211.  
<https://doi.org/10.1080/713663717>
- ch-1.pdf. (n.d.). Retrieved from <http://shodhganga.inflibnet.ac.in/bitstream/10603/22964/5/ch-1.pdf>
- Garrett, H.E. (1981). *Statistics in psychology and education*. Bombay: Vakils Feffer and Simons Ltd.
- Hastings, R. P., & Oakford, S. (2003). Student Teachers' Attitudes towards the Inclusion of Children with Special Needs. *Educational Psychology*, 23(1), 87–94.  
<https://doi.org/10.1080/01443410303223>
- Innovative Education Technology Company | Foradian. (n.d.). Retrieved February 22, 2018, from <http://www.foradian.com/20-great-quotes-on-teachers/npe86.pdf>
- npe86.pdf. (n.d.). Retrieved from [http://www.ncert.nic.in/oth\\_anoun/npe86.pdf](http://www.ncert.nic.in/oth_anoun/npe86.pdf)
- Right To Education. (n.d.). Retrieved February 22, 2018, from <http://righttoeducation.in/who-are-%E2%80%98disadvantaged-children%E2%80%99-and-children-belonging-%E2%80%98weaker-sections%E2%80%99>
- Teacher22s attitude towards inclusion - Google Scholar. (n.d.). Retrieved February 23, 2018, from [https://scholar.google.co.in/scholar?hl=en&as\\_sdt=0%2C5&q=teachers+attitude+towards+22inclusion&btnG=](https://scholar.google.co.in/scholar?hl=en&as_sdt=0%2C5&q=teachers+attitude+towards+22inclusion&btnG=)
- What is Pre-Service Teachers | IGI Global. (n.d.). Retrieved February 22, 2018, from <https://www.igi-global.com/dictionary/pre-service-teachers/23201>



## IMPACT OF VALUATION RATIOS ON THE PERFORMANCE OF MAJOR INDIAN SECTORAL MARKET INDICES

N. Venkatesh Kumar\*; Dr. M Ganesh Babu\*\*

\*Research Scholar,  
PG & Research Department of Management,  
Rajagiri Dawood Batcha College of Arts & Science,  
Papanasam, Tamil Nadu, INDIA.  
Email id: npavsk@gmail.com

\*\*Assistant Professor & Research Advisor,  
PG & Research Department of Management,  
Rajagiri Dawood Batcha College of Arts & Science,  
Papanasam, Tamil Nadu, INDIA.  
Email id: ishwar\_ind2002@yahoo.com

### ABSTRACT

*This empirical research paper examines the impact of major market valuation ratios on the performance of sectoral market indices namely Bombay Stock Exchange's S&P BSE BANKEX and National Stock Exchange's NIFTY BANK for the period from 2005 to 2018. The monthly closing prices of respective index, Price-Earnings ratio, Price to Book ratio and Dividend Yield have been used for analysis and the latter three have been considered as explanatory variables in the model framework. The robust techniques such as Wald-Wolfowitz Runs test and ordinary least square multiple regressive model have been used for statistical inference. The study has shown that both the selected indices exhibit skewed distribution, weak-form inefficient during the study period.*

**KEYWORDS:** S & P Bse Bankex, NSE Nifty Bank, Efficient Market, Weak-Form, Runs Test, Valuation Ratio.

## I. INTRODUCTION

Indian Banking industry is marching at its growth trajectory in the recent years due to massive digital initiatives and vast integration of various products and services. In India, there are twenty seven public sector banks, twenty one private sector banks, forty nine foreign banks, fifty six regional rural banks, 1562 urban cooperative banks, and 94384 rural cooperative banks are in existence as on 31<sup>st</sup> August, 2018 (*Source: Reserve Bank of India*). It is evident from the aforementioned data, there have been exponential surge in terms of channelising the increased level of income from rural India into banking system, there is a need for augmenting the banking system in rural area which would apparently drive the banking sector in the growth path. Despite the Indian banking system supports all the Endeavour's of the fastest growing economy in the world, there are growing concerns in terms of managing the challenges, especially managing the distressed loans which spread across all the sectors. Though the growth in deposits is at its growth path (During FY 2017-18, the growth in deposits increased by \$112 billion), the interest income from deployed funds across all sectors is witnessing sluggish trend (During FY 2017-18, the interest income considering the public sector banks, private sector banks and foreign banks has grown only by \$9 billion), which perhaps attributed to distressed loans. Thus, volatility in terms of the financial performance is expected to bring change in the companies' strategies to meet and satisfy the investors' expectations in the market. Nonetheless the sectoral bank indices trembles, due to enormous extent of digitization in India in all verticals, it is expected to stabilize in the long-run. However, considering the present scenario, the study is envisioned to examine the banking sector indices for its market efficiency at its weak-form and analyse the impact of valuation ratios namely price earnings ratio, price to book ratio, dividend yield and trend component on the banking sector indices performance.

## II. REVIEW OF LITERATURE

Dutta *et al.* (2012) used eight significant valuation ratios namely Book value, percentage change in net sales, price to book value, price to cash earnings per share, profit before interest, depreciation and tax to sales, cash price to earnings per share, sales to net assets, price to earnings per share to examine the performance of selected stocks from NSE NIFTY by administering logistic regression model and found that 74.6% extent of accuracy had brought better performers and bad performers among the selected stocks. Basu (1977) attempted to determine the nature of relationship between performance of common stocks and their Price-Earnings ratio due to the very fact that albeit efficient market hypothesis empirically proved, another school of thought still believes the Price-Earnings ratio would delineate the future performance of stock. Naka *et al.* (1998) considered the macroeconomic variables such as Industrial Production Index, Inflation, Consumer Price Index, Money Supply, Money Market rate, Output, and Interest rate and analysed their impact on the performance of Bombay Stock Exchange by employing Vector Error Correction Model which was articulated by Johansen (1991). The authors attributed that the similar explanatory variables were used by Lee (1992), Darrat (1990), Chen *et al.* (1986), Hamao (1988), Mukherjee & Naka (1995), Darrat & Mukherjee (1987) and Brown & Otsuki (1989). They found that the Industrial Production Index and Inflation were the highest positive and negative determinants respectively. Patel (2012) examined the impact of macroeconomic indicators on the performance of Indian Stock Market during the period between 1991 and 2011 by considering the monthly closing prices pertaining to S&P BSE SENSEX and NSE NIFTY. It was found that Inflation and Money Supply were the major factors influenced the stock market during the study period. Bi-directional causality was

observed between the selected indices and Oil prices as well as Index of Industrial Production. Ahmed (2008) found that the existing Interest rate regime seemed to bring the change in the stock prices in India as well as stock prices had driven the economic activity in India. Sehgal & Tripathi (2005) analysed top 482 organisations in India between the period 1990 and 2003 and found that the investment strategies based on size had significant economic viability due to rendering abnormal returns on the risk adjusted basis. Mohanty (2002) used Fama & Macbeth's model to examine the impact of internal firm specific characteristics on stock returns and found that Price-Earnings ratio and Market leverage were found to be positively correlated and Price to Book ratio and Market Capitalisation were found to be negatively correlated with the stock returns during the study period.

### III. OBJECTIVE OF THE STUDY

The objective of the study is to examine the impact of market valuation ratios on the performance of sectoral market indices i.e. S & P BSE BANKEX, NIFTY BANK in Indian Stock Market.

### IV. DATA AND METHODOLOGY

From the major Indian Stock Exchanges namely Bombay Stock Exchange (BSE) and National Stock Exchange (NSE), the banking sector indices a) S&P BSE BANKEX and b) NSE NIFTY BANK have been selected for analysis. There are ten banking institutions such as Axis Bank, Bank of Baroda, Federal Bank, HDFC Bank, ICICI Bank, IndusInd Bank, Kotak Bank, Punjab National Bank, State Bank of India, and Yes Bank constitute the S&P BSE BANKEX; all the aforementioned banking institutions along with IDCF Bank and RBL Bank constitute NSE NIFTY BANK. There are four prominent variables namely respective indices monthly closing prices ( $V_t$ ), Price-Earnings ratio (PER), Price to Book ratio (PBR) and Dividend Yield (DY) ratio are selected for the analysis during the study period from January, 2005 to March, 2018 which accounts 159 monthly observations. The aforementioned variables values are extracted from Bombay Stock Exchange's and National Stock Exchange's historical database (*Retrieved from <https://www.bseindia.com> and <https://www.nseindia.com> on 31<sup>st</sup> August, 2018*). Following stages elucidate the analysis framework.

Stage 1 → Examination of normality pertaining to monthly closing prices of selected sectoral indices using the robust Jarque – Bera test statistic (Jarque & Bera, 1980, 1981, 1987).

Stage 2 → Examination of informational efficiency at weak-form using the Wald-Wolfowitz runs test (Wald & Wolfowitz, 1940).

Stage 3 → Application of OLS regressions for individual explanatory variables on monthly closing prices of selected banking indices and investigating the nature of relationship. (Pearson *et al.*, 1903)

$$\widehat{V}_{it} = \alpha_t + \beta_1 PER_t + e_i \text{ (Iterated for both indices)} \quad (4.1)$$

$$\widehat{V}_{it} = \alpha_t + \beta_1 PBR_t + e_i \quad \text{(Iterated for both indices)} \quad (4.2)$$

$$\widehat{V}_{it} = \alpha_t + \beta_1 DY_t + e_i \quad \text{(Iterated for both indices)} \quad (4.3)$$



Stage 4 → Application of multiple regression by considering the all the explanatory variables on monthly prices of selected banking indices and examining combined nature of relationship. (Pearson *et al.*, 1903)

$$\widehat{V}_{It} = \alpha_t + \beta_1 PER_t + \beta_2 PBR_t + \beta_3 DY_t + e_t (4.4)$$

Where,  $V_{It}$  is the expected value of index at period 't',  $\alpha_t$  is the intercept term of the multiple regressive model,  $\beta_1, \beta_2, \beta_3$  are the coefficients of the explanatory variables and  $e_t$  is the white noise error term.

## V. RESULTLS AND DISCUSSIONS

**TABLE 5.1 DESCRIBES THE NORMALITY STATISTICS PERTAINING TO THE SELECTED INDICES.**

| Sectoral Indices          | Skewness               | JB Statistic | P      | Decision                |
|---------------------------|------------------------|--------------|--------|-------------------------|
| <b>S&amp;P<br/>BANKEK</b> | <b>BSE</b> 0.6595***   | 12.94        | 0.0016 | Significant, Non-normal |
| <b>NSE<br/>BANK</b>       | <b>NIFTY</b> 0.6921*** | 13.76        | 0.0010 | Significant, Non-normal |

\*\*\* 0.01, \*\* 0.05, \* 0.1 Level of Significance

In order to examine normality of the indices the monthly closing values of respective indices have been used. The prominent assumption to test the normality is to examine whether the selected data follows symmetrical distribution or asymmetrical distribution i.e. skewed distribution. Hence, the null hypothesis is set as that the indices monthly closing values follows normal distribution (Skewness = 0) against the alternate hypothesis that the monthly closing indices value do not follow the normal distribution. In an informationally efficient market, the indices data perhaps tend to follow normal distribution in the long-run. Since the data comprises fourteen long years, it is expected that the banking sector indices anticipated to follow symmetrical distribution. But, the results narrated in Table 5.1 reveal that S & P BSE BANKEK and NSE NIFTY BANK did not follow normal distribution (Reject null hypothesis at 0.001 level of significance:  $P_{Cal} < P_{LOS}$ : 0.0016, 0.0010 < 0.01) during the study period.

**TABLE 5.2 DESCRIBES THE RESULTS OF WALD-WOLFOWITZ RUNS TEST.**

| Sectoral Indices          | Test Statistic         | Z      | P      | Decision                |
|---------------------------|------------------------|--------|--------|-------------------------|
| <b>S&amp;P<br/>BANKEK</b> | <b>BSE</b> 11751.18*** | -10.90 | 0.0000 | Significant, Non-Random |
| <b>NSE NIFTY BANK</b>     | 10237.75***            | -10.90 | 0.0000 | Significant, Non-Random |

\*\*\* 0.01, \*\* 0.05, \* 0.1 Level of Significance

In order to examine the monthly closing values' weak-form efficiency i.e. random occurrence of price pertaining to the constituent stocks of respective indices, the robust Wald-Wolfowitz Runs test has been used. If weak-form efficient is observed, the historical prices may not be useful in order to generate abnormal return. On the contrary, if weak-form efficiency not observed, then the past prices perhaps contain very useful information which would be possibly exploited to

gain excess returns on investment. Hence, the null hypothesis is set as that the monthly closing price levels pertaining to the selected indices occurs purely on random basis against the alternate hypothesis that the data series follows a significant pattern. The results of Runs test described in Table 5.2 reveals that the null hypothesis is rejected at 0.01 level of significance and accentuate that the monthly closing price level of selected banking sector indices do not occur under the assumption of pure stochastic process, thus, S & P BSE BANKEX and NSE NIFTY BANK remained weak-form inefficient during the study period and allows the investors to predict the future price level by considering the historical prices.

**TABLE 5.3 ITERATES THE RESULTS OF ORDINARY LEAST SQUARE REGRESSION WHEN THE EXPLANATORY VARIABLES ARE USED INDIVIDUALLY TO ANALYSE THE STATISTICAL SIGNIFICANCE.**

| S & P BSE BANKEX     |                                  |        |               | NSE NIFTY BANK                   |        |             |
|----------------------|----------------------------------|--------|---------------|----------------------------------|--------|-------------|
| Explanatory Variable | Coefficient                      | P      | Decision      | Coefficient                      | P      | Decision    |
| Trend                | 139.35***<br>(t = 31.85)         | 0.0000 | Significant   | 122.67***<br>(t = 31.83)         | 0.0000 | Significant |
| Price-Earnings Ratio | 993.18***<br>(t = 16.02)         | 0.0000 | Significant   | 869.83***<br>(t = 17.66)         | 0.0000 | Significant |
| Price-Book Ratio     | 1804.65<br>(t = 1.56)            | 0.1210 | Insignificant | 4633.26***<br>(t = 5.44)         | 0.0000 | Significant |
| Dividend Yield       | -<br>13467.56***<br>(t = -11.08) | 0.0000 | Significant   | -<br>11406.81***<br>(t = -15.81) | 0.0000 | Significant |

\*\*\* 0.01, \*\* 0.05, \* 0.1 Level of Significance

The ordinary least square analysis has been carried out in two phases a) Analysing the performance of respective indices considering the market valuation ratios individually and b) Analysing the performance of respective indices considering the market valuation ratios collectively i.e. multiple regressive model. For running the regression, explanatory variables namely Trend, Price-Earnings ratio, Price to Book ratio and Dividend yield are considered. In order to examine the individual impact, the null hypothesis has been set as that the individual explanatory variables do not significantly influence ( $\beta = 0$ ) the performance of the selected sectoral indices against the alternate hypothesis that the explanatory variables significantly influence ( $\beta \neq 0$ ) the performance of selected sectoral indices. It is seen from Table 5.3 that the trend variable, price earnings ratio and dividend yield are found statistically significant at 0.01 level of significance ( $P_{Cal} < P_{LOS}$ :  $0.0000 < 0.01$ ) for both indices. Price to book ratio is statistically insignificant while evaluating the performance of S & P BSE BANKEX ( $P_{Cal} > P_{LOS}$ :  $0.1210 > 0.01$ ), apparently it exhibited contradicting result while evaluating the performance of NSE NIFTY BANK i.e. reject the null hypothesis at 0.01 level of significance ( $P_{Cal} < P_{LOS}$ :  $0.0000 < 0.01$ ) and conclude that the price to book ratio significantly influences the performance of NSE NIFTY BANK. The subsequent analysis is carried to examine the collective impact of all explanatory variables.

**TABLE 5.4 SHOWS THE OUTCOME OF THE MULTIPLE REGRESSIVE MODEL PERTAINING TO S & P BSE BANKEX.****Model fitness statistics – S & P BSE BANKEX (Jan., 2005 to Mar., 2018)**R = +0.98      R<sup>2</sup> = 0.97      DW Statistic = 0.462

F = 1176.87 \*\*\* (P = 0.0000)

| Explanatory Variable | Intercept term                     | Coefficient                | P     | Decision                                    |
|----------------------|------------------------------------|----------------------------|-------|---|
| Trend                |                                    | 103.31***<br>(t = 30.90)   | 0.000 | Significant, Reject H <sub>0</sub>          |
| Price-Earnings Ratio | 3907.60***<br>(t = 3.24,<br>0.001) | 363.76***<br>(t = 10.81)   | 0.000 | Significant, Reject H <sub>0</sub>          |
| Price-Book Ratio     |                                    | -454.95<br>(t = -1.42)     | 0.159 | Insignificant, Do not reject H <sub>0</sub> |
| Dividend Yield       |                                    | -3158.98***<br>(t = -6.77) | 0.000 | Significant, Reject H <sub>0</sub>          |

**Model iteration:**

$$\hat{V}_t = 3907.6_t + 103.31T_t + 363.76PER_t - 454.95PBR_t - 3158.98DY_t + e_t$$

\*\*\* 0.01, \*\* 0.05, \* 0.1 Level of Significance

(Durbin-Watson test values @ 0.01 & 0.05 level of significance with four regressors,  $d_L$ : 1.571,  $d_U$ : 1.679,  $d_L$ : 1.679,  $d_U$ : 1.711 respectively)

The multiple regressive analysis shown in Table 5.4 for S & P BSE BANKEX exhibits that the constructed model is a perfect fit due to the very fact that the large proportion of variance is explained by the model ( $F = 1176.87, P_{Cal} < P_{LOS}: 0.0000 < 0.01$ ), eventually it is also supported by the R-squared value i.e. 97%. This signifies that 97% of variance in monthly closing prices of the selected sectoral indices is explained by the explanatory variables collectively during the study period. The Durbin-Watson test is used to examine the residuals of the regression with the prominent assumption that they are purely random with mean zero i.e. there is no significant autocorrelation exists among the residuals of the regression. The study revealed that the ascertained residuals of regression pertaining to S & P BSE BANKEX said to contain statistically significant positive autocorrelation ( $0.462 < 1.571$ ), which substantiate the outcomes of normality and runs test. The explanatory variables such as trend, price earnings ratio, and dividend yield remained statistically significant at 0.01 level of significance. The price to book ratio remained insignificant as it has been insignificant when examined individually. Though the dividend yield statistically significant, it has exhibited negative impact to the extent of 3158.98 during the study period. On account of investors' high expectation on dividend from the constituent stocks of S & P BSE BANKEX and eventual aggressive expansion strategies of the constituent companies, would have possibly resulted this direction.

**TABLE 5.5 SHOWS THE OUTCOME OF THE MULTIPLE REGRESSIVE MODEL PERTAINING TO NSE NIFTY BANK.****Model fitness statistics – NSE NIFTY BANK (Jan., 2005 to Mar., 2018)**

R = +0.98

R<sup>2</sup> = 0.97

DW Statistic = 0.191

F = 1097.19 \*\*\* (P = 0.0000)

| Explanatory Variable | Intercept term                 | Coefficient                | P     | Decision                                    |
|----------------------|--------------------------------|----------------------------|-------|---|
| Trend                |                                | 93.14***<br>(t = 31.13)    | 0.000 | Significant, Reject H <sub>0</sub>          |
| Price-Earnings Ratio | 4205.05**<br>(t = 2.21, 0.029) | 161.35***<br>(t = 3.92)    | 0.000 | Significant, Reject H <sub>0</sub>          |
| Price-Book Ratio     |                                | 375.39<br>(t = 1.15)       | 0.251 | Insignificant, Do not reject H <sub>0</sub> |
| Dividend Yield       |                                | -3199.61***<br>(t = -4.78) | 0.000 | Significant, Reject H <sub>0</sub>          |

**Model iteration:**

$$\widehat{V}_t = 4205.05_t + 93.14T_t + 161.35PER_t + 375.39PBR_t - 3199.61DY_t + e_t$$

\*\*\* 0.01, \*\* 0.05, \* 0.1 Level of Significance

(Durbin-Watson test values @ 0.01 & 0.05 level of significance with four regressors,  $d_L$ : 1.571,  $d_U$ : 1.679,  $d_L$ : 1.679,  $d_U$ : 1.711 respectively)

Initial examination with respect to NSE NIFTY BANK from Table 5.5 has revealed similar results exhibited by S & P BSE BANKEX i.e. the constructed model is well fit and explains higher proportion of variance pertaining to monthly closing prices of the NSE NIFTY BANK and apparently the calculated R-squared value substantiates to the extent of 97%. The residuals of the regression exhibited statistically significant positive serial correlation with their preceding observations ( $0.191 < 1.571$ ). The explanatory variables namely trend component, price earnings ratio and dividend yield are statistically significant at 0.01 level of significance. On the contrary, when examined collectively, the price to book ratio turned insignificant as it was significant at the time of individual examination. The dividend yield component negatively influences the monthly closing prices of NSE NIFTY BANK to the extent of 3199.61.

**VI. CONCLUSION**

This empirical paper is intended to examine the performance of banking sector indices such as S & P BSE BANKEX and NSE NIFTY BANK by considering the monthly closing prices for the period between January, 2005 and March, 2018. Initial examination for normality revealed that both selected indices did not follow normal distribution during the study period. Wald-Wolfowitz examination for price randomness exhibited that the selected indices followed a

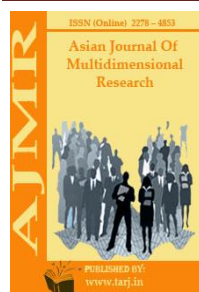
significant pattern and remained weak-form inefficient during the study period. Hence, the historical prices reflect potentially useful information and the future prices remain predictable. In such a scenario, investors perhaps use the historical prices wisely to generate abnormal returns by constructing a structured portfolio which resembles the passive indices namely S & P BSE BANKEX and NSE NIFTY BANK. The causal examination for understanding the significant market valuation ratios, the multiple OLS regression has revealed that the explanatory variables namely price earnings ratio, dividend yield and trend component were statistically significant to explain the monthly closing prices of the selected banking sector indices and price to book ratio remained statistically insignificant to explain the monthly closing prices of the selected banking sector indices during the study period. The price to book ratio has shown contradicting result when it was examined individually with the monthly closing prices of NSE NIFTY BANK i.e. statistically significant at 0.01 level of significance. Albeit, the banking indices have shown the skewed distribution, due to revolutionized cashless economy, strengthened macro-economic indicators in the recent past, and anticipated GDP growth rate of 7.7% by 2020 (*Source: International Monetary Fund*), banking sector is expected to contribute and build a strong ecosystem in India.

## REFERENCES

- Ahmed, S., 2008. Aggregate Economic Variables and Stock Market in India. *International Research Journal of Finance and Economics*, 14, pp.141-164.
- Basu, S., 1977. Investment Performance of Common Stocks in relation to their Price-Earnings Ratios: A test of the Efficient Market Hypothesis. *The Journal of Finance*, 32(3), pp.663-682.
- Brown, S.J., and Otsuki, T., 1989. Macroeconomic factors and the Japanese Equity Markets: The CAPMD project. *Salomon Bros. Centre for the Study of Financial Institutions, Graduate School of Business Administration, New York University*.
- Chen, N.F., Roll, R., and Ross, S.A., 1986. Economic Forces and Stock Market. *Journal of Business*, 59, pp.383-403.
- Darrat, A.F., 1990. Stock Returns, Money, and Fiscal Policy. *Journal of Financial and Quantitative Analysis*, 25, pp.387-398.
- Darrat, A.F., and Mukherjee, T.K., 1987. The Behaviour of the Stock Market in a Developing Economy. *Economic Letters*, 22, pp.273-278.
- Dutta, A., Bandopadhyay, G., and Sengupta, S., (2012). Prediction of Stock Performance in Indian Stock Market using Logistic Regression. *International Journal of Business and Information*, 7(1), pp.105-136.
- Hamao, Y., 1988. An Empirical Investigation of the Arbitrage Pricing Theory. *Japan and the World Economy*, 1, pp.45-61.
- Jarque, C.M., and Bera, A.K., 1980. Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economic Letters*, 6(3), pp.255-259.
- Jarque, C.M., and Bera, A.K., 1981. Efficient tests for normality, homoscedasticity and serial independence of regression residuals: Monte Carlo evidence. *Economic Letters*, 7(4), pp.313-318.

- Jarque, C.M., and Bera, A.K., 1987. A test for normality of observations and regression residuals. *International Statistical Review*, 55(2), pp.163-172.
- Johansen, S., 1991. Estimation and Hypothesis Testing Cointegrating Vectors in Gaussian Vector Autoregressive Models. *Econometrica*, 59, pp.1551-1580.
- Lee, B. S., 1992. Causal Relationships among Stock Returns, Interest Rates, Real Activity and Inflation. *Journal of Finance*, 47, pp.1591-1603.
- Mohanty, P., 2002. Evidence of Size Effect on Stock Returns in India. *Vikalpa: The Journal for Decision Makers*, 27(3), pp.27-38.
- Mukherjee, T., and Naka, A., 1995. Dynamic Linkages between Macroeconomic variables and the Japanese Stock Market: An application of a Vector Error Correction Model. *Journal of Financial Research*, 18, pp.223-237.
- Naka, A., Mukherjee, T., and Tufte, D., 1998. Macroeconomic variables and the performance of the Indian Stock Market. *Department of Economics and Finance working papers, University of New Orleans, 1991-2006*, Paper 15.
- Patel, S., 2012. The effect of Macroeconomic Determinants on the performance of the Indian Stock Market. *NMIMS Management Review*, 22, pp.117-127.
- Pearson, K., Yule, G.U., Blanchard, N., and Lee, A., 1903. The Law of Ancestral Heredity. *Biometrika*, 2(2), pp.211-236.
- Sehgal, S., and Tripathi, V., 2005. Size Effect in Indian Stock Market: Some Empirical Evidence. *Vision: The Journal of Business Perspectives*, 9(4), pp.27-42.
- Wald, A., and Wolfowitz, J., 1940. On a test whether two samples are from the same population. *The Annals of Mathematical Statistics*, 11, pp.147-162.





## YOGA AND STRESS MANAGEMENT

**Dr. Surender Tanwer\***

\* Associate Professor,  
Department of physical Education,  
S.A.Jain College Ambala City. INDIA.

### ABSTRACT

*In the situations of high demands and pressured life, right stress management involves learning organise things and emotions. Work on your temperament can put things into acknowledgement. Do not take things too seriously. Optimism helps a lot in such situations. Always be positive and work hard. Yoga provides us with various techniques and forms of physical exercises that have been considered and acknowledged to have a positive role in stress management. Yoga can have a positive effect on the physico-nervous system. It results in a healthy and normal heartbeat and blood pressure. The regulation of oxygen is maintained. It results in healthy digestion while boosting immunity. Work on your temperament can put things into acknowledgement. Do not take things too seriously. Optimism helps a lot in such situations. Always be positive and work hard. Holmes and Rahe Stress Scale can be used to measure it to rate stressful life events. Sudden fluctuation in blood pressure and galvanic skin response can also be recorded and followed to test stress levels, and changes in stress levels. Coming back to the stress management, yoga provides a matchless way of controlling stress through pranayama (A birthing technique).*

**KEYWORDS:** *Concentration, Anxiety, Apprehensions, Depression, Frustration, Strain, Financial Burdens,*

## **INTRODUCTION**

### **STRESS: A DEFINITION**

Physical and mental reaction at various situations and conditions of our lives is called stress. The level of stress varies from situation to situation and from individual to individual. Walter Canon (1929) says that the stress is needed in order to help us with an acute response such as in “fight or flight” situation. Fight or flight response, oblivion, lack of mental concentration, anxiety, apprehensions and fear, depression and strain, extreme anger and frustration, family problems, social isolation, and lack of interest in activities.

Some Symptoms of Stress are as follows:

- headaches and heaviness
- nervous stomach
- fall in appetite
- fast breathing
- rapid heart rate
- sweaty palms and feet
- irritation
- anxiety
- fatigue and tiredness
- insomnia and sleeplessness
- dissatisfaction and discontentment
- anger
- depression and strain
- lack of concentration
- emotional problems and mood swings
- back pain migraine headache
- Suicidal tendency

### **Various causes of Stress:**

It occurs due to various reasons like, unexpected changes in life, unsuccessful Marriages, divorces, pregnancy, prolonged sickness/illness, financial burdens, increasing demands of academics, feeling of futility and superannuation.

Physical Constraints: physical exhaustion, lack of good exercise and sedentary lifestyles diet strategies

### **STRESS MANAGEMENT: Various Techniques**

There are several ways to cope up and with stress and to fight it away. Time management can really help a person to control stress. In the situations of high demands and pressured life, right stress management involves learning to organise things and emotions. You should know your working and emotional limits. The following techniques have been recently referred to as the “Destressitizers” by The Journal of the Canadian Medical Association. A destressitizer is a theory or process by which an individual can surpass the stress. Techniques of stress management can be different for different individuals with no fixed pattern of management; however, it may include some of the following:

- Autogenic training
- Cognitive therapy
- Conflict resolution
- Exercise
- Getting a hobby
- Meditation
- Deep breathing
- Relaxation techniques
- Artistic Expression
- Fractional relaxation
- Progressive relaxation
- Spas
- Spending time in nature
- Stress balls
- Natural medicine
- Clinically validated alternative treatments
- Time management
- Listening to certain types of relaxing music, particularly:
  - New Age music
  - Classical music
  - Psychedelic music

#### **MEASUREMENT OF STRESS LEVEL**

Levels or stages of stress can be measured. Holmes and Rahe Stress Scale can be used to measure it to rate stressful life events. Sudden fluctuation in blood pressure and galvanic skin response can also be recorded and followed to test stress levels, and changes in stress levels. A digital thermometer can be put to use in order to evaluate changes in skin temperature, which would point to the activation of the fight-or-flight response drawing blood away from the extremities. Work on your temperament can put things into acknowledgement. Do not take things too seriously. Optimism helps a lot in such situations. Always be positive and work hard.

#### **ROLE OF YOGA IN STRESS MANAGEMENT**

Yoga provides us with various techniques and forms of physical exercises that have been considered and acknowledged to have a positive role in stress management. These techniques work both at an individual level and at a collective level to make things easy and the control of stress can be easily noticed. They not only help in doing away with the stress but also wipe out the negative physical as well as mental thoughts and feelings; thus producing a healthy and productive response to the stress stimulation. Yoga can have a positive effects on the psychoneurological system. It results in a healthy and normal heartbeat and blood pressure. The regulation of oxygen is maintained. It results in healthy digestion while boosting immunity. It also helps in effective removal of toxic wastes from the body while increasing breathing capacity. Regular Yoga exercise can also reduce levels of anxiety which finally results in Stress.

Yoga can be practiced through body postures, stretching movements, breathing exercises that enhances relaxation and concentration of body and mental thoughts. Individual techniques are

designed for a particular purposes. They lead to a body and emotional awareness of what one feels during stress pertaining to physical and psychological changes.

Coming back to the stress management, yoga provides a matchless way of controlling stress through pranayama (A birthing technique). This technique demands an individual to do slow and relaxed breathing like inhaling through his one nostril and exhaling through other. Besides there are fast breathing techniques like intake of air through nostrils and exhaling through mouth at various paces. Using this technique, the way air is passed properly through blood capillaries and the subject feels light not only physically but emotionally and mentally i.e. he/she feels that there is heaviness on one's body and spirit

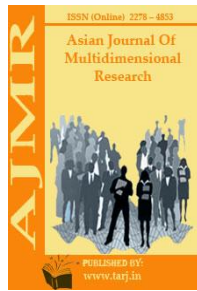
### **MEDITATION TECHNIQUES**

Meditation (*Dhyana*) is also a good technique of stress management. In this exercise, Yoga demands a person to sit comfortably and in a relaxed position and think of a pleasant situation, such as a favourite place or person or any other thing that one likes and feels happy about. Imagine yourself in a blessed and happy situation. Afterwards, breathing slowly and smoothly, take a while to lighten yourself. The extra amount of oxygen that goes in the body and mind increases the brain's thinking ability and body's endurance and immunity.

Lately, Yoga has been recognised nationally and internationally as an effective tool of stress management. East and West both have acknowledged its role in Physical exercise and mental regulation.

### **REFERENCES**

- I.** Butlin, J. (2001), Links between the Physical and the Emotional. WholisticResearch
- II.** Company, 1-3. Retrieved April 29, 2003 from Annotation: Information about emotional influences on the physical body.
- III.** Chugh, D. (1987). Effects of Sahaja Yoga practice on the patients of psychosomatic diseases. Delhi University, Annotation: Information about mechanism of Sahaja Yoga and research on psychosomatic diseases.
- IV.** Dally, E., et al. (1993) Measuring the impact of menopausal symptoms on quality of life. Br. Medical Journal, 307, 836-840, Annotation: information about menopausal symptoms.
- V.** Network, <http://www.cyc-net.org>: <http://www.cyc-net.org/reference/refs-psychosomatic-levenstein.html>



## THE CONCEPT OF GREEN HRM-A REVIEW OF LITERATURE

Sonal Singh Rathi \*; Dr. Vikas nath\*\*

\*Assistant professor and ph.d scholar,  
BVIMR, New Delhi, INDIA.  
Email id: ssonal0@gmail.com

\*\*Director and Dean (Academics),  
And Professor of Marketing at BVIMR,  
New Delhi, INDIA.

---

### ABSTRACT

*Nowadays it seems that a considerable number of organizations practice green human resource management practices in the global context. Exploring and synthesizing about these green HRM practices which are being practiced and are to be practiced by the business and other organizations will contribute significantly to the HRM field academically and practically. In order to achieve and write down this paper, a systematic review of literature is being conducted by using an archival method. This paper employs a methodology to review the articles cited in the databases Sage, Taylor and Francis Online, Springer link, Science Direct, JSTOR, Wiley Online Library, and Emerald with "green HRM or environmental HRM" as the topic. Hence the study for this paper becomes a desk research rather than a survey or any other mode of researching.*

**KEYWORDS:** *Green HRM, Review of Literature, HRM*

## INTRODUCTION

Nowadays it seems that a considerable number of organizations practice green human resource management practices in the global context. Exploring and synthesizing about these green HRM practices which are being practiced and are to be practiced by the business and other organizations will contribute significantly to the HRM field academically and practically. Green HRM is an emerging field of research in the organisational studies after 1990s. Due to that, this paper has its focus on exploring green HRM practices from the light of existing theoretical and empirical research works done by the scholars in this field. Hence, the objective of this review is to explore and record green human resource management practices of the organisations based on the existing literature (theoretical as well as empirical).

Presently, existence of green concept in the organization is becoming a standard (Margaretha & Saragih, 2013) as well as in the field of management, the scope of research is increasing day by day on the literature of green marketing, its accounting, environmental management and green human resources management (D. W. Renwick, Redman, & Maguire, 2013). Furthermore, there is developing requirement for the assimilation of green management in the field of human resource which is also called green or environmental human resource (Dutta, 2012; Margaretha & Saragih, 2013). On the other hand, it is noticeable that this field is still on the infancy stage and most of the research studies on green human resource management is still on theoretical stage (Jabbour, 2013). Today, companies are realizing the need of strong grip of social moral sense and responsibilities towards green sense, building brands and having all essential tools for it as it is not the only responsibility, development in other areas is also very necessary for business (Sathya priya, 2013).

“Being green” is very comprehensive procedure in which organization’s main objective is to reduce cost, creative usage of energy, less waste of viable resources or materials that can be recycled for end products etc. (Jafri, 2015). For the development of green organization, the company and its human resources department should come up with efficient strategies, they should learn to perform the procedure in short time period, utilization of compensation resources should be minimum and creative, unnecessary travelling and spending time in office should be eliminated. Organizations which are supporters of “green” strategies include telecommunication and companies which have flexible work hours (Sathyapriya, 2013). To inaugurate and sustain a “green” concept in the organization we require workers who have interest in eco-friendly issues, therefore the organization should hire people accordingly (D. W. Renwick et al., 2013). To compose green policy, definite objectives should be taken to enhance environmental performance, green management system, to publish the reports of green performance, green coaching and development of its knowledge, environmental buying guidelines, policy developments required for minimizing the usage of fossil fuel and other unsustainable products (Ramus, 2002). The general reputation of the company improves if its environmental performance is good and also draws attention towards great potential employees. The progress on green theory encourages organization to evolve their worker’s ability to create and synthesize products that closely follow agreement or instructions by green regulations (Chen, 2012). By developing market image, there is higher appealing public reputation, extra efficacy business procedures, better employment, better quality of goods and services, raise in workers work rate, better competitive advantage, more determination and confidence, increase trust of the customers, more motivated employees engaged and committed towards their work due to the embracement of environmental human resource management (D. W. Renwick et al., 2013).



Furthermore, Renwick (2013) stated “employee motivation to become involved in environmental activities lags behind that of how organizations develop Green abilities and provide employees with opportunities to be involved in green management organizational efforts” (D. W. Renwick et al., 2013). According to Correa (2013), countless organizations that use green HR management, have gained benefits in many different ways, green policies implementation is beneficial for organization. Their employees are more self-confident and have positive attitude towards their work and firm’s financial performance is improved. Almost each adoption of green guideline and principle assist businesses profit by decreasing their unfavourable bad effects on environment and by developing their labour work rate (Delmas & Pekovic, 2013).

### **AIM OF THE PAPER**

The main aim of the paper is to underpin the various aspects of green HRM through a thorough review of literature available. In order to achieve and write down this paper, a systematic review of literature is being conducted by using an archival method. This paper employs a methodology to review the articles cited in the databases Sage, Taylor and Francis Online, Springer link, Science Direct, JSTOR, Wiley Online Library, and Emerald with “green HRM or environmental HRM” as the topic. Hence the study for this paper becomes a desk research rather than a survey or any other mode of researching

### **REVIEW OF LITERATURE -GREEN HRM**

First this review addresses the meaning and interpretation of green HRM. According to Renwick et al, (2008), the integration of corporate environmental management into human resource management is termed as green HRM. They also stated that human resources aspects of environmental management are green HRM. These scholars broadly specified that distinguished policies in the field of recruitment, performance management and appraisal, training and development, employment relations and pay and reward are considered as powerful tools for aligning employees with an organization’s environmental strategy. According to Jabbour et al, (2010), the „greening“ of functional dimensions of human resource management such as job description and analysis, recruitment, selection, training, performance appraisal and rewards is defined as green HRM. In 2011, Jabbour again defined green HRM as “the level of greening of human resource management practices” in terms of functional and competitive dimensions of HRM. Green HRM is referred to “*all the activities involved in development, implementation and on-going maintenance of a system that aims at making employees of an organization green. It is the side of HRM that is concerned with transforming normal employees into green employees so as to achieve environmental goals of the organization and finally to make a significant contribution to environmental sustainability. It refers to the policies, practices and systems that make employees of the organization green for the benefit of the individual, society, natural environment, and the business*” (Opatha, 2013; Opatha and Anton Arulrajah, 2014). As far as the above definitions are concerned, the very latest definition provides a comprehensive meaning and understanding about what green HRM is in the context of organisational setting.

HRM practices are the actual human resource programs, processes and techniques that actually get implemented in the organisation or business unit (Gerhart et al, 2000; Huselid and Becker, 2000). Similarly, green HRM practices are the actual green HRM programs, processes and techniques that actually get implemented in the organisations in order to reduce negative environmental impacts or enhance positive environmental impacts of the organisations. The

ultimate aim of green HRM practices is to improve the organisation's sustainable environmental performance.

### **GREEN HRM PRACTICES**

There are functions of HRM which are generally considered as traditional and there can be a variety of green practices under each function. The following section presents summaries of the existing and certain new green HRM practices under each function of green HRM.

### **GREEN JOB DESIGN AND ANALYSIS**

In general, job descriptions can be used to specify a number of environmental protection related task, duties and responsibilities (Wherever, 1996; Renwicketal, 2008and 2013). These days, some companies have incorporated environmental and social tasks, duties and responsibilities as far as possible in each job in order to protect the environment. In some companies, each job description includes at least one duty related to environmental protection and also specifically includes environmental responsibilities whenever and wherever applicable. Job descriptions and person (job) specifications may include environmental, social, personal, and technical requirements of the organizations as far as possible. For example, environmental protection duties should be included, along with the allocation of environmental reporting roles and health and safety tasks(CrosbieandKnight,1995;

Wehrmeyer, 1996;North,1997;Revill,2000).In addition, some companies use team work and cross-functional teams as job design techniques to successfully manage the environmental issues of the company(May and Flannery,1995;Florida,1996;Clement, 1997; Palmer and Andrews,1997;Beard and Rees,2000;Griffiths and Petrick,2001;Daily and Huang, 2001;Govindarajulu and Daily, 2004;Jabbour, Santos, and Nagano, 2010).It is because of the reason that environmental protection task of a company requires or demands multi-disciplinary team works.

Now a day's many companies have designed environmental concerned new jobs or positions in order to focus exclusively on environmental management as parts of the organizations. From the perspective of HRM, it is really a valuable initiation and practice to protect the environment. Moreover, some companies have involved in designing their existing jobs in a more environmentally friendly manner by incorporating environmental centered duties and responsibilities. These are some of the best green HRM practices which can figure out under the functions called green job design and green job analysis.

**HR and Sustainability:** Organizations are increasingly apprehensive with sustainability and corporate social responsibility. The HR function is exceptionally placed to assist in both developing and implementing sustainability strategy. The HR function can provide as a co-worker in formative what is needed or what is achievable in creating corporate values and sustainability strategy.

**Green Management:** A Green organization is defined as a workplace that is environmentally receptive, resource well-organized and socially responsible. In the environmental writing, the impression of green management for sustainable development has different definitions; all of which normally, look for balance between organizational growth for wealth design and protection the natural environment so that the future making may succeed.

### **Green Recruitment:**

Green recruiting is a system where the focus is given on importance of the environment and making it a major element within the organization. Complementing this, the recruits are also enthusiastic, and to some extent, passionate about working for an environment friendly “green” company. Recruiting candidates with green bend of mind make it easy for firms to induct professionals who are aware with sustainable processes and are already familiar with basics like recycling, conservation, and creating a more logical world.

**Green Selection:** In the selection context, when making selection for the job vacancies some companies consider candidates environmental concern and interest as selection criteria. When interviewing candidates or evaluating them for selection, environmental related questions are asked by those companies.

### **GREEN HUMAN RESOURCE PLANNING**

At present, some companies engage in forecasting number of employees and types of employees, needed to implement corporate environmental management initiatives/programs/activities (e.g. ISO 14001, cleaner production, responsible care etc.). These are good practices some leading companies have adopted to manage their environmental issues. The corporate environmental management initiatives demand some new job positions and specific set of skills. Green human resource planning gets required in this context. In addition these companies engage in deciding strategies to meet the forecasted demand for environmental works (e.g. appointing consultants/experts to perform energy or environmental audits) and sometimes they are outsourcing. As far as existing literature is concerned, it did not clearly specify the practices under the function of green human resource planning

### **GREEN RECRUITMENT**

In general, environment concerned companies have their own environmental policy framework. In materializing the established environmental policies, companies need environmentally oriented workforce. In creating environmental oriented workforce, companies have two options: First is focusing on green recruitment. Second is providing required environmental protection related awareness, education, training and development to the existing workforce. The first option is more proactive and cost effective than the second option. Hence, searching best green recruitment practices is important to organizations. In the recruitment context, what some companies are doing is that they integrate corporate environmental policy and strategies with the recruitment policy of the company. A survey by the British Carbon Trust confirms that most of the employees (more than 75%) considering working for an organisation perceived it as important that they have an active environmental policy to reduce carbon emissions (Clarke, 2006).

On the other hand, potential employees also search and want to work in the environmental concerned organizations. In United Kingdom environmental issues have an impact on organizations’ recruitment efforts, and according to a survey high-achieving graduates judge the environmental performance and reputation of a company as a criterion for decision- making when applying for job vacancies (Wehrmeyer, 1996; Oates, 1996). The Chartered Institute of Personnel and Development (CIPD) believe in that becoming a green employer may improve employer branding, company image and is a useful way to attract potential employees who have environmental orientation (CIPD, 2007).

Attracting environmentally aware talent might be facilitated by pro-active branding of the organization as a high-quality “green employer of choice” (Renwick et al, 2008; Jackson et al,

2011). Increasingly, firms are beginning to recognize that gaining a reputation as a green employer is an effective way to attract new talent (Phillips, 2007; Stringer, 2009). Really, environmentally responsible employers can attract talent that they needed to implement corporate environmental management initiatives and ultimately it contributes to achieve organization's environmental goals.

Additionally, in order to attract environmentally concerned people for job vacancies, job advertisements of some companies express certain environmental values (e.g. be a part of the green team of ABC.. or we are a socially and environmentally responsible employer) in their job advertisements. Some companies also express their preferences to recruit candidates who have competency and attitudes to participate in corporate environmental management initiatives too. These are some of the green recruitment practices an organisation can have.

### **GREEN SELECTION**

In these selection context, when making selection for the job vacancies some companies consider candidates' environmental concern and interest as selection criteria. When interviewing candidates or evaluating them for selection, environmental-related questions are asked by those companies (Crosbie and Knight, 1995; Wehrmeyer, 1996; North, 1997; Revill, 2000). Really, these are some of the good green selection practices any organization can adopt to select environmental friendly people in addition to then or mal selection criteria relating to the specific duties of the job being concerned. Selection should considering candidate's environmental concern and interest as selection criteria. When interviewing candidates or evaluating them for selection, to ask environment related questions and selecting applicants who are sufficiently aware of greening to fill job vacancies. Preference should be given to select applicants who have been engaging in greening as consumers under their private life domain.

### **GREEN INDUCTION**

Induction for new employees seems to be needed to ensure they understand and approach their corporate environmental culture in a serious way (Wehrmeyer, 1996). Companies can adopt two approaches in respect of green induction. They are general green induction and job specific green induction. Some companies practice general green induction. After selecting the candidates for the posts, these companies provide necessary basic information about the corporate environmental management policy, system and practices. In some instances, certain organizations do specific green induction as well to their new recruits. They induct new employees about environmental orientation programs specific to their jobs. In general, these two green induction practices are important for any organization nowadays.

Organizations should ensure that new recruits understand their environmental responsibilities, become familiar with health and safety arrangements, appreciate the corporate environmental culture, adopt the company's environmental policy and practices, and know given relevant contact persons within the organisation (Crosbie and Knight, 1995; Wehrmeyer, 1996; North, 1997; Revill, 2000; Renwick et al, 2008; Renwick et al, 2013).

For new employees seem to be needed to ensure they understand and approach their corporate environmental culture in a serious way. Companies can adopt two approaches in respect of green induction. They are general green induction and job specific green induction. HRM practices under the green induction is to Providing general green induction; Providing job specific green induction; Making new employees familiar with greening efforts of the organization and

encourage them to engage in green interpersonal citizenship behaviour

### **GREEN PERFORMANCE EVALUATION**

Measuring employee green performance of job is one of the key functions in green HRM. Without this practice any organisation cannot ensure the realistic environmental performance (firm level) in long term basis. Evaluation of green performance of employee must be done separately or at least as a part of the performance evaluation system of the organisation. The measurement criteria of employee green performance of job must be carefully aligned with the organization's criteria of environmental performance.

In order to sustain good environmental performance, organizations must establish Environmental Management Information Systems (EMIS) and environmental audits. Many organizations have established environmental management information systems (Wells et al, 1993), and environmental audits (Carpenter, 1994). Schwalm (1994) states that the aim of an environmental management information system is to effectively monitor the large number of pollution, resource usage, energy and regulatory requirements an organisation encounters. Milliman and Clair (1996) state that when an EMIS has been developed, it is important that it is not just used for reporting purposes, but should also be integrated with performance appraisals of managers as well as employees. Incorporating corporate environmental management objectives and targets with the performance evaluation system of the organisation is a must for any organization nowadays. Organizations must include environmental issues as well as environmental incidents, take-up of environmental responsibilities and the success of communicating environmental concerns and policy within the performance evaluation system of the company (Wehrmeyer, 1996).

Installing corporate-wide environmental performance standards is also a must in the green performance evaluation context. Firms like Amoco in the United States (U.S.) have tackled them by installing corporate-wide environmental performance standards (which cover on-site use, waste management, environmental audits, and the reduction of waste) to measure environmental performance standards, and developing green information systems and audits (to gain useful data on managerial environmental performance). The Union Carbide Corporation is a wholly owned subsidiary of The Dow Chemical Company, that includes a green audit programme that contains field audits – which are seen as important, as they can give employees a mechanism by which they can raise any recurring problems, and gain information and feedback on past and future environmental performance of their firm (Milliman and Clair, 1996).

Installing corporate-wide environmental performance standards or establishing green performance indicators into performance management system, and appraisals is not adequate. Communication of green schemes, performance indicators and standards to all levels of staff through performance evaluation system and establishing firm-wide dialogue on green matters are also needed to materialize targeted environmental performance (Renwick et al, 2008; Renwick et al, 2013).

Managers must set green targets, goals and responsibilities for their sections or divisions or departments, they should assess number of green incidents, use of environment responsibility, and successful communication of environmental policy within their scope of their operations (Renwick et al, 2008; Renwick et al, 2013).

For example, some companies have environmental goals (targets) for each employee or group (team) or department or division to achieve in a given period of time. Those companies formally evaluate the extent to which each employee, group (team), department or division has achieved



environmental goals (targets). And also supervisors and managers of those companies give regular feedback to the employees or teams to achieve environmental goals or improve their environmental performance. Performance management (PM) is the process by which employees are prompted to enhance their professional skills that help to achieve the organizational goals and objectives in a better way. The recognition of the corporate strategy culminates into the PM. With the EM (Environment Management) affecting global business strategy, PM is also being influenced by the green wave in a possible positive manner.

### **GREEN TRAINING AND DEVELOPMENT**

Providing environmental training to the organizational members (non-managerial employees and managers) to develop required skills and knowledge is an important function of green HRM. This will be helpful to implement corporate environmental management programs of the company (Cook and Seith, 1992). Providing training to encourage recycling and waste management, supporting flexible schedules and telecommuting, and reducing long-distance business travel (Jackson et al, 2011) are very useful to reduce the negative environmental impacts of the organisations.

Creating environmental awareness among the workforce by conducting seminars and workshops at organizational level is also important to achieve good environmental performance. Providing environmental education that will result in a change of attitude and behaviour among managers and non-managerial employees (North, 1997) is also needed to the organisations. For example, in Fuji Xerox Singapore, every staff goes through eco- awareness training, as well as the sales forces receive education on the green aspects of its product and supplies. Apart from these, some organizations celebrates annual „environmental day“ at company/organization level by organizing many competitive programs for non- managerial employees, managers and children of employees. This is also a good practice to inculcate certain key eco-values among the workforce as well as their family members.

Renwick et al, (2008 and 2013) suggest certain green training and development practices such as training staff to produce green analysis of workspace, application of job rotation to train green managers of the future, provision of specific training on environmental management aspects of safety, energy efficiency, waste management, and recycling, development of green personal skills, and re-training of staff losing jobs in relevant polluter industries.

Environmental related education, training and development are key areas of green HRM in an organisation. Without proper education, training and development, materializing targeted environmental performance of a firm is very difficult to achieve. Therefore, it seems that certain companies have actually realized the importance of green education, training and development in their organizational setting.

Nowadays, some companies seriously analyze and identify environmental training needs of employees in order to make them more environmental concerned workforce. Really, these are good practices and also needed to implement corporate environmental management initiatives. Based on environmental training needs analysis of the workforce, these companies conduct serious and systematic education, training and development programs which are given to the employees for the purpose of providing needed knowledge, skills and attitudes for good environmental management. Training and development is a practice that focuses on development of employees' skills, knowledge and attitudes prevent deterioration of EM-related knowledge, skills, and attitudes. Green training and development educate employees about the value of EM, train them in working methods that conserve energy, reduce waste, diffuse environmental



awareness within the organization, and provide opportunity to engage employees in environmental problem-solving.

### **GREEN REWARD MANAGEMENT**

Green reward management is another key function of green HRM. The sustainability of organization's environmental performance is highly dependent on the green reward management practices of the organizations. To motivate managers and non-managerial employees on corporate environmental management initiatives, green reward management has significant contributions. Organizations can practice it in two ways such as financial and non-financial. In some companies employees are financially (e.g. incentives, bonuses, cash) rewarded for their good environmental performance. In some other companies, employees are non-financially rewarded (awards/special recognitions/honors/prizes) for their good environmental performance. Crosbie and Knight (1995) stated that some companies have successfully rewarded extraordinary environmental performance, practices and ideas by including environmental criteria into salary reviews. Due to the scarcity of financial rewards, recognition rewards for environmental performance have been established in many organizations, including Monsanto, Dow Chemical, and ICI Americas Inc, (Whitenight, 1992). The success of recognition rewards relies on the importance of company-wide identification. For example, such attention increases employees' awareness of environmental achievements (Bhushan and Mackenzie, 1994).

Communicating employee environmental excellence is also a good practice in some organizations. There are many ways in which organizations can communicate their environmental excellence within the organisation. For example, managers at Coors present awards at important meetings to employees who have participated in successful environmental programmes (Woods, 1993).

Having diverse employee environmental performance recognition programs at different levels is also needed for many organizations. The core success of recognition rewards is making them available at different levels within the organisation. For example, Xerox has awarded a number of company-wide environmental teams excellence awards in recognition for developing environmentally-sound packaging, re-use of materials and packaging, and the marketing of recycled paper for Xerox copiers (Bhushan and Mackenzie, 1994). Introducing rewards for innovative environmental initiative/performance reward program is also needed to encourage some creativity and innovation among the workforce. For example, Xerox has also further developed an "Earth Award" that recognizes achievements in innovations of waste reduction, re-use and recycling (Bhushan and Mackenzie, 1994). Providing incentives to encourage recycling and waste management, supporting flexible schedules and telecommuting, and reducing long-distance business travel (Jackson et al, 2011) can also be considered as green reward management practices.

Moreover "Pollution Prevention Pays" (For example, 3M has Pollution Prevention Pays program in practice), "Waste Reduction Always Pays" (For example, Dow has Waste Reduction Always Pays program in practice), "Priority One" (For example, Monsanto has this program in waste reduction), and „Save Money and Reduce Toxics" (SMART) at Chevron are some good examples for the company specific green reward management practices (Berry and Randinelli, 1999).

Renwicketal, (2008) suggest several green reward management practices. They are green pay/reward system, tailor packages to reward green skills acquisition, use of monetary-based environmental management rewards(bonuses, cash, premiums), use of non-monetary based

environmental management rewards(sabbaticals, leave, gifts),use of recognition-based environmental management rewards(awards, dinners, publicity, external roles, daily praise), positive rewards in environmental management(feedback), personal reward plan for all to gain green stewardship/citizenship, linking suggestion scheme with rewards system, linking participate on in green initiatives with promotion/career gains (managers advance through supporting staff in environmental management),and use of green tax breaks. Rewards and compensation are the major HRM processes through which employees are rewarded for their performance. These HR practices are the most powerful method which links together an individual's interest to that of the organization's. We also assert that incentives and rewards can influence employees' attention to the maximum at work and motivate them to exert maximum effort on their part to achieve organizational goals.

### **GREEN HEALTH AND SAFETY MANAGEMENT**

The green health and safety management is really beyond the scope of traditional health and safety management function of HRM. It really includes the traditional health and safety management and some more aspects of environmental management of an organisation. That is why nowadays many organizations are redesigning post of "health and safety manager" as "health, safety and environmental manager". This post includes a wider job scope when compared with traditional post of health and safety manager in an organisation. For example, it includes biodiversity protection and community support initiatives etc. The key role of green health and safety management is to ensure a green workplace for all. Green workplace is defined as a workplace that is environmentally sensitive, resource efficient and socially responsible (SHRM, 2009). At present there are companies where traditional health and safety function was extended to include environmental management/protection. These companies have continually endowed to create various environmental related initiatives to reduce employee stress and occupational disease caused by hazardous work environment.

In order to improve health and safety of employees, some companies have really created strategies (e.g. green factory/green zone) to maintain a conducive environment to prevent various health problems. These aspects can be considered as some examples for green health and safety management practices of the organizations. Some proactive companies(3M, DuPont, Allied, Signal, Amoco, and Monsanto)in environmental management found that management of environment and its cost lead to improvements in the health of employees and local communities, enhancing the image of the company as a desirable employer and corporate citizen.

### **GREEN EMPLOYEE DISCIPLINE MANAGEMENT**

Wehrmeyer (1996) stated explicitly that green discipline management is a pre-requisite in corporate environmental management. In ensuring green employee behaviour in the workplace, organizations may need green discipline management practices to achieve the environmental management objectives and strategies of the organisation.

In this context, some companies have realized "discipline management" as a tool to self-regulates employees in environmental protection activities of the organisation. These companies have developed a clear set of rules and regulations which imposes/regulates employees to be concerned with environmental protection in line with environmental policy of the organisations. In such companies, if an employee violates environmental rules and regulations, disciplinary actions (warning, fining, suspension, etc.) are taken against him/her.

Renwicketal,(2008)indicates that setting penalties for non compliance on targets in environmental management, discipline and/or dismissal for environmental management breaches, and

developing negative rein for cements in environmental management(criticism, warnings, suspensions for lapses)are also worthwhile practices under the function of green employee discipline management. In case of rule violations which are not serious, it is a good practice to apply progressive discipline which is a system that progresses from the least severe to the most severe in terms of disciplinary actions/penalties.

### **GREEN EMPLOYEE RELATIONS**

The evolution of green HRM has penetrated into the employee relations and union management activities of the organisation. In green HRM, employee relations and union support (in a unionized workforce context) are critical in implementing corporate environmental management initiatives and programs. Some companies have strategies (joint consultations, gain sharing, recognizing union as a key stakeholder in environmental management) to get the expected support of trade unions for corporate environmental management initiatives. Really it a good practice to increase firm's environmental performance.

Renwick et al, (2008 and 2013) suggested certain green employee relations and union management practices. They include employee involvement and participation in green suggestion schemes and problem-solving circles, staff independence to form and experiment with green ideas, integrating employee involvement and participation in to maintenance (cleaning), employee help-line for guidance in green matters, tailoring green employee involvement schemes to industry/company standards, increasing line/supervisory support behaviors in environmental management, union-management negotiating to reach green work place agreements, training of union representatives in respect of environmental management aspects, encouraging employees to use green forms of transport, set-up of low carbon chiefs(including CEO and Board)to increase action in environmental management, and introducing green whistle-blowing and help-lines.

### **CONCLUSION**

Exploring and synthesizing about these green HRM practices which are being practiced and are to be practiced by the business and other organizations will contribute significantly to the HRM field academically and practically. Green HRM is an emerging field of research in the organisational studies after 1990s. Due to that, this paper has its focus on exploring green HRM practices from the light of existing theoretical and empirical research works done by the scholars in this field. Hence, the objective of this review is to explore and record green human resource management practices of the organisations based on the existing literature. It was found that organisations that are environmentally receptive, resource well-organized and socially responsible go green in all the functional area of HRM.

### **REFERENCES**

- Beard, C. and Rees, S. (2000), Green Teams and the Management of Environmental Change in UK Country Council, *Environmental Management and Health*, Vol.11, No.1, pp. 27-38.
- Berry, M.A. and Rondinelli, D.A. (1998), Proactive corporate environmental management: A new industrial revolution, *Academic Management Executive*, Vol.12, No. 2, pp.38-50.
- Bhushan, A.K. and Mackenzie, J.C.(1994), *Environmental leadership plus total quality management equals continuous improvement*, *Environmental TQM*, 2<sup>nd</sup>ed, McGraw- Hill, New York, pp. 72-93.

- Carpenter,(1994),In Milliman, J.and Clair, J.(1996), Best Environmental HRM Practices in the USA, In Wehrmeyer, W.(eds) (1996),*Greening People- Human Resources and Environmental Management*, Sheffield, England: Green leaf Publishing.
- Chartered Institute of Personnel and Development (CIPD) (2007), the environment and people management, Discussion web page.
- Clarke, E. (2006), Power Brokers, *People Management*, 18thMay, pp. 40-42.
- Clement, K. (1997), Multi-disciplinary Teams and Environmental Integration: European Programmes, *Team Performance Management*, and Vol. 3, pp. 261-269.
- Cook J. and Seith, B. J. (1992), Designing an effective environmental EMS training program, *Journal of Environmental Regulation*, Vol. 2, No. 1, pp. 53-62.
- Crosbie, L. and Knight, K. (1995), *Strategy for Sustainable Business: Environmental Opportunity and Strategic Choice*, McGraw-Hill, Maidenhead: England.
- Daily, B. F. and Huang, S.(2001), Achieving Sustainability Through Attention to Human Resource Factors in Environmental Management, *International Journal of Operation and Production Management*, Vol. 21, No. 12, pp. 1539-1552.
- Ditz.D. Ranganath an, J.and Banks, R.D. (1995), *Green Ledgers: Case Studies in Corporate Environmental Accounting*, World Resources Institute, Washington.
- Florida, R. (1996), Lean and Green: The Move to Environmentally Conscious Manufacturing, *California Management Review*, Vol. 39, No. 1, pp. 80-105.
- Gerhart, B. Wright, P. M. Mc Mahan, G.C.and Snell, S.A. (2000), Measurement Error in Research on Human Resources and Firm Performance: How Much Error is there and How Does it In fluence Effect Size Estimates, *Personnel Psychology*, Vol.53, No. 4. pp. 803-834.
- Govindarajulu, N. and Daily, B.F.(2004),Motivating employees for environmental improvement, *Industrial Management and Data Systems*, Vol.104,No.4,pp.364-372.
- Griffiths, A. And Pet rick, J. A. (2001), Corporate Architecture for Sustainability, *International Journal of Operations and Production Management*, Vol.21, No.12, pp.1573-1585.
- Huselid, M.A. and Becker, B.E.(2000),Comment on,, Measurement Error“ in Research on Human Resources and Firm Performance: How Much Error is There and How Does it Influence Effect Size Estimates?, *Personnel Psychology*, Vol. 53, pp. 835-854.
- Jabbour, C.J.C. (2011), How green are HRM practices, organizational culture, learning and teamwork? A Brazilianstudy, *Industrial and Commercial Training*, Vol.43, No.2, pp. 98 -105.
- Jabbour, C.J. C.Santos, F.C.A. and Nagano, M.S. (2010).Contribution of HRM throughout the stages of environmental management: methodological triangulation applied to companies in Brazil, *The International Journal of Human Resource Management*, Vol. 21, No.7, pp. 1049-1089.
- Jackson, S.E. Renwick, D. W. S. Jabbour C.J. C. and Camen, M.M.(2011), State-of-the-Art and Future Directions for Green Human Resource Management: Introduction to the Special Issue, *German Journal of Research in Human Resource Management*, Vol. 25, No. 2, pp. 99-116.
- May, D.R, and Flannery, L.B.(1995),Cutting waste with employee involvement teams, *Business Horizon*, Vol. 38, No. 5, pp. 28-38.
- Milliman, J. and Clair, J.(1996),Best Environmental HRM Practices in the USA, In Wehrmeyer, W.,(eds),*Greening People- Human Resources and Environmental Management*, Sheffield, England: Greenleaf Publishing.

- North, K.(1997),*Environmental Business Management–An Introduction*,2<sup>nd</sup> ed, International Labour Office: Geneva.
- Oates, A. (1996), Industrial Relations and the Environment in the UK, In Wehrmeyer, W. (Eds), (1996), *Greening People- Human Resources and Environmental Management*, First Edition, Sheffield, England: Green leaf Publishing.
- Opatha, H.H.D.N. P.(2013), Green Human Resource Management: A Simplified Introduction, HR Dialogue, Department of HRM, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, pp.22-41.
- Opatha, H. H. D. N. P. and Anton Arulrajah, A. (2014), Green Human Resource Management: A Simplified General Reflections, *International Business Research*, Vol. 7, No. 8, pp. 101-112.
- Palmer, J. and Andrews, L. (1997), Team-work to Green Small and Medium-Size Enterprise?, *Team Performance Management*, Vol. 3, No. 3, pp.193-205.
- Phillips, L. (2007),Go Green to Gain the Edgeover Rivals, *People Management*, 23<sup>rd</sup> August, p.9.
- Renwick, D.W.S. Redman, T. and Maguire, S.(2008), Green HRM: A Review, Process Model, and Research Agenda, University of Sheffield Working Paper <http://www.sheffield.ac.uk/content/1/c6/08/70/89/2008-01.pdf>.
- Renwick, D.W.S. Redman, T. and Maguire, S.(2013),Green Human Resource Management: A Review, and Research Agenda, *International Journal of Management Review*,Vol. 15, pp. 1-14.
- Revill, C. (2000), The „Greening“ of Personnel/Human Resource Management an Assessment, *International Journal of Applied HRM*, Vol.1, No. 3, pp. 1-30.
- Schwalm,(1994),In Milliman, J., and Clair, J.(1996), Best Environmental HRM Practices in the USA, In Wehrmeyer, W. (eds),(1996),*Greening People- Human Resources and Environmental Management*, First Edition, Sheffield, England: Greenleaf Publishing.
- Society for Human Resource Management (SHRM) (2009), Green workplace: Survey brief. Alexandria, VA: Author. Retrieved from <http://www.shrm.org/Research/SurveyFindings/Articles/Documents/SHRM%20Green%20Workplace%20Survey%20Brief.pdf>.
- Stringer, L.(2009),*The Green Workplace .Sustainable Strategies that Benefit Employees, the Environment, and the Bottom Line*, Palgrave Macmillan: New York.
- Wehrmeyer, W. (1996), *Greening People – Human Resources and Environmental Management*, Sheffield, England: Green leaf Publishing.
- Wells, etal,(1993),In Milliman, J., and Clair, J.(1996),Best Environmental HRM Practices in the USA, In Wehrmeyer,W.(eds),(1996),*Greening People-Human Resources and Environmental Management*, First Edition, Sheffield, England: Green leaf Publishing.
- White night,(1992),In Milliman, J., and Clair, J.(1996),Best Environmental HRM Practices in the USA, In Wehrmeyer, W., (eds),(1996),*Greening People-Human Resources and Environmental Management*, First Edition, Sheffield, England: Greenleaf Publishing.
- Woods,(1993),In Milliman,J., and Clair, J. (1996),“Best Environmental HRM Practicesin the USA”,In Wehrmeyer, W.,(eds),(1996),*Greening People-Human Resources and Environmental Management*, First Edition, Sheffield, England: Green leaf Publishing.
- Aiman-Smith, L., Bauer, T.N., and Cable, D.M. (2001), ‘Are you attracted? Do you intend to pursue? A recruiting policy-capturing study,’ *Journal of Business and Psychology*, 16, 2, 219-237.



- Albareda, L., Lozano, J.M., Tencati, A., Midttun, A., and Perrini, F. (2008), 'The changing role of governments in corporate social responsibility: drivers and responses', *Business Ethics: A European Review*, 17, 347-363.
- Albareda, L., Tencati, A., Lozano, J.M., and Perrini, F. (2006), 'The government's role in promoting corporate responsibility: a comparative analysis of Italy and UK from the relational state perspective', *Corporate Governance*, 6, 386-400.
- Albinger H.S., and Freeman S.J. (2000), 'Corporate social performance and attractiveness as an employer to different job seeking populations,' *Journal of Business Ethics*, 28, 3, 243-253.
- Aldrich, H. E., and Herker, D. (1977), 'Boundary spanning roles and organization structure,' *Academy of Management Review*, 2, 2, 217-230.
- Allen, N.J, and Meyer, J.P. (1996), 'Affective, continuance, and normative commitment to the organization: An examination of construct validity,' *Journal of vocational behavior*, 49, 252-276.
- Appelbaum, E., Bailey, T., Berg, P., and Kalleberg, A. (2000), *Manufacturing advantage: why high-performance work systems pay off*, Ithaca: Cornell University Press.
- Aragon-Correa, J. A., and Sharma, S. (2003), 'A contingent resource-based view of proactive corporate environmental strategy,' *The Academy of Management Review*, 28, 71-88.
- Argenti, P.A. (1999), 'Strategic employee communications,' *Human Resource Management*, 37, 3-4, 199-206.
- Argyris, C. (1993), *Knowledge for action: A guide to overcoming barriers to organizational change*, San Francisco: Jossey-Bass.
- Argyris, C., and Schön, D.A. (1978), *Organizational learning: a theory of action perspective*, Boston, MA: Addison-Wesley.
- Bamberg, S., and Schmidt, P. (2003), 'Incentives, morality, or habit? Predicting students' car use for university routes with the models of Ajzen, Schwartz, and Triandis,' *Environment and behavior*, 35, 2, 264-285.
- Banerjee, S. B., Iyer, E. S., and Kashyap, R. K. (2003), 'Corporate environmentalism: antecedents and influence of industry type,' *Journal of Marketing*, 106-122.
- Bansal, P. (2004), 'Evolving sustainably: a longitudinal study of corporate sustainable development,' *Strategic Management Journal*, 26, 3, 197-218.
- Bansal, P., and Clelland, I. (2004), 'Talking trash: legitimacy, impression management, and unsystematic risk in the context of the natural environment,' *Academy of Management Journal*, 47, 1, 93-103.
- Bansal, P., and Hunter, T. (2003), 'Strategic explanations for the early adoption of ISO 14001,' *Journal of Business Ethics*, 46, 3, 289-299.
- Barley, S. R., and Kunda, G. (1992), 'Design and devotion: Surges of rational and normative ideologies of control in managerial discourse,' *Administrative Science Quarterly*, 363-399.
- Barney, J. (1991), 'Firm resources and sustained competitive advantage,' *Journal of management*, 17, 1, 99-120.
- Baron, J. N., Jennings, P. D., and Dobbin, F. R. (1988), 'Mission Control? The Development of Personnel Systems in U.S. Industry,' *American Sociological Review*, 53, 497-514.
- Bass, B.M., and Riggio, R.E. (2005), *Transformational leadership*. Lawrence Erlbaum. Bauer, T.N, and Aiman-Smith, L. (1996), 'Green career choices: The influence of ecological stance on recruiting,' *Journal of Business and Psychology*, 10, 4, 445-458.
- Bauer, T.N, Erdogan, B., and Taylor, S. (2012), 'Creating and Maintaining Environmentally



Sustainable Organization: Recruitment and On-Boarding,' in Managing human resources for environmental sustainability, eds. Susan E. Jackson,

- Deniz S. Ones and Stephan Dilchert, New Jersey: Jossey-Bass, pp. 222-240. Baum, J.A. (1996), 'Organizational ecology,' in Studying Organization: Theory and Method, Eds. Stewart R. Clegg and Cynthia Hardy, Thousand Oaks, California: Sage, pp.71-108.
- Beard, C., and Rees, S. (2000), 'Green teams and the management of environmental change in a UK county council,' Environmental Management and Health, 11, 1, 2738.
- Behrend, T. S., Baker, B. A., and Thompson, L. F. (2009), 'Effects of pro-environmental recruiting messages: The role of organizational reputation,' Journal of Business and Psychology, 24, 3, 341-350.
- Benz, M., and Frey, B.S. (2007), 'corporate governance: what can we learn from public governance?' Academy of Management Review, 32, 1, 92-104.
- Berrone, P., and Gomez-Mejia, L. R. (2009), 'Environmental performance and executive compensation: An integrated agency-institutional perspective,' Academy of Management Journal, 52, 1, 103-126.
- Berry, M.A, and Rondinelli, D.A. (1998), 'Proactive corporate environmental management: A new industrial revolution,' The Academy of Management Executive, 12, 2, 38-50.
- Berry, M.A, and Rondinelli, D.A. (1998), 'Proactive corporate environmental management: A new industrial revolution,' The Academy of Management Executive, 12, 2, 38-50.
- Biga, A., Ones, D.S., Dilchert, S., and Gibby, R.E. (2010), 'Ethical Climate Change Perceptions and Sustainability: An Individual Level Analysis,' Conference of Society for Industrial and Organizational Psychology, Atlanta, Georgia.
- Black, J. S., Stern, P. C., and Elworth, J. T. (1985), 'Personal and contextual influences on house hold energy adaptations,' Journal of Applied Psychology, 70, 1, 3.
- Blocker, T.J., and Eckberg, D.L. (1997), 'Gender and environmentalism: Results from the 1993 general social survey,' Social Science Quarterly-Austin, 78, 841-858.
- Boiral, O. (2002), 'Tacit knowledge and environmental management,' Long Range Planning, 35, 3, 291-317.
- Boiral, O. (2009), 'Greening the corporation through organizational citizenship behaviors,' Journal of Business Ethics, 87, 2, 221-236.
- Boon, C., Paauwe, J., Boselie, P., and Hartog, D. (2009), 'Institutional pressures and HRM: developing institutional fit.' Personnel Review, 38, 5, 492-508.
- Boselie, P. (2009), 'A Balanced Approach to Understanding the Shaping of Human Resource Management in Organizations,' Management Revue, 20, 1, 90-108.
- Boselie, P., Dietz, G., and Boon, C. (2006), 'Commonalities and contradictions in RM and performance research,' Human Resource Management Journal, 15, 3, 67-94.
- Boxall, P. and Purcell, J. (2011), Strategy and Human Resource Management (3rd ed.), Basingstoke: Palgrave Macmillan.
- Boxall, P., and Purcell, J. (2000), 'Strategic human resource management: where have we come from and where should we be going?' International Journal of Management Reviews, 2, 183-203.
- Boxall, P., and Purcell, J. (2003), 'Strategy and human resource management,' Industrial & Labor Relations Review, 57, 1, 84.
- Brandl, J., Ehnert, I., and Bos-Nehles, A. (2012), 'Organising HRM: the HRM department and line management roles in a comparative perspective,' in Handbook of Research in

Comparative Human Resource Management, Eds. Chris Brewster & Wolfgang Mayrhofer, Edward Elgar Publishing, 239-267.

- Branzei, O., Ursacki- Bryant, T. J., Vertinsky, I., and Zhang, W. (2004), 'The formation of green strategies in Chinese firms: Matching corporate environmental responses and individual principles,' *Strategic Management Journal*, 25, 11, 1075-1095.
- Bratt, C. (1999), 'The impact of norms and assumed consequences on recycling behavior,' *Environmental and Behavior*, 31, 630-656.
- Brewster, C., Mayrhofer, W., and Morley, M. (2004), *Human resource management in Europe: Evidence of convergence?* Burlington, MA: Elsevier Butterworth Heinemann.
- Brief, A.P., and Motowidlo, S. J. (1986), 'Prosocial organizational behaviors,' *Academy of management Review*, 11, 4, 710-725.
- Brown, M.P., Sturman, M.C., and Simmering, M.J. (2003), 'Composition policy and organizational performances: the efficiency, operational, and financial implications of pay levels and pay structure,' *Academy of Management Journal*, 46, 6, 752-762.
- Buller, P. F., and McEvoy, G. M. (2000), 'Creating and sustaining ethical capability in the multi-national corporation,' *Journal of World Business*, 34, 4, 326-343.
- Cameron, K. S. (1986), 'Effectiveness as paradox: Consensus and conflict in conceptions of organizational effectiveness,' *Management Science*, 32, 5, 539-553.
- Cameron, K.S., and Quinn, R.E. (1988), 'Organizational paradox and transformation,' in *Paradox and transformation: toward a theory of change in organization and management*, Eds. Quinn R.E. and Cameron K.S., Cambridge, MA: Ballinger, pp. 1-18.
- Cappelli, P., and Neumark, D. (2001), *External job churning and internal job flexibility*, National Bureau of Economic Research Working Paper, no. 8111.
- Carroll, B., Levy, L., and Richmond, D. (2008), 'Leadership as practice: Challenging the competency paradigm,' *Leadership*, 4, 4, 363-379.
- Chapman, D. S., Uggerslev, K. L., Carroll, S. A., Piasentin, K. A., and Jones, D. A. (2005), 'Applicant attraction to organizations and job choice: a meta-analytic review of the correlates of recruiting outcomes,' *Journal of Applied Psychology*, 90, 5, 928-944
- Chatterji, A.K., Levine, D.I., and Toffel, M.W. (2009), 'how well do social ratings actually measure corporate social responsibility?' *Journal of Economics & Management Strategy*, 18, 1, 125-169.
- Coglianese, C., and Nash, J. (2001), *Regulating from the inside: can environmental management systems achieve policy goals?* RFF Press.
- Cook, J., and Seith, B.J. (1992), 'Designing an Effective Environmental Training Program,' *Journal of Environmental Regulation*, 53-62.
- Corbin, J. M., and Strauss, A. (1990), 'Grounded theory research: Procedures, canons, and evaluative criteria,' *Qualitative sociology*, 13, 1, 3-21.
- Cordano, M., and Frieze, I.H. (2000), 'Pollution reduction preferences of us environmental managers: applying Ajzen's Theory of planning behavior,' *Academy of Management Journal*, 43, 4, 627-641.
- Crawford, D., and Scaletta, T. (2005), 'The balanced scorecard and corporate social responsibility: Aligning values for profit,' *CMA MANAGEMENT*, 79, 6, 20-27.
- Czaja, S.J., Charness, N., Fisk, A.D., Hertzog, C., Nair, S.N., Rogers, W., and Sharit, (2006), 'Factors predicting the use of technology: findings from the Center for Research and Education on Aging and Technology Enhancement (CREATE),' *Psychology and aging*, 21, 2,

333-352.

- D'Amato, A., Eckert, R., Ireland, J., Quinn, L., and Van Velsor, E. (2010), 'Leadership practices for corporate global responsibility,' *Journal of Global Responsibility*, 1, 2, 225 – 249.
- D'Mello, S., Wiernik, B.M., Ones, D.S., and Dilchert, S. (April, 2011), 'The Relationship between Educational Level, Income, and Environmentalism: A Meta Analysis,' *Conference for Industrial and Organizational Psychology*, Chicago, Illinois.
- Dahab, M., Montag, D., and Parr, J. (1994), 'Pollution Prevention and Waste Minimization at a Galvanizing and Electroplating Facility: A Case Study,' *Water Science and Technology*, 30, 243-250.
- Daily, B.F., and Huang, S. (2001), 'Achieving sustainability through attention to human resource factors in environmental management,' *International Journal of Operations & Production Management*, 21, 12, 1539-1552.
- Darnall, N., Jolley, G.J., and Hand field, R. (2008), 'Environmental management systems and green supply chain management: complements for sustainability?' *Business Strategy and the Environment*, 17, 1, 30-45.
- De Leede, J., and Looise, J.K. (2005), 'Innovation and HRM: towards an integrated framework,' *Creativity and innovation management*, 14, 2, 108-117.
- De Woot, P. (2005), *Should Prometheus Be Bound? Corporate Global Responsibility*, New York: Palgrave Macmillan.
- Deckop, J.R., Merriman, K.K., and Gupta, S. (2006), 'The effects of CEO pay structure on corporate social performance,' *Journal of Management*, 32, 3, 329-342.
- Delmas, M.A., and Toffel, M.W. (2004), 'Stakeholders and environmental management practices: an institutional framework,' *Business strategy and the Environment*, 13, 4, 209-222.
- Deming, W.E. (1988), *Out of the Crisis: Quality, productivity and competitive position*, Cambridge: Cambridge University Press.
- Denison, D., Hooijberg, R., and Quinn, R. E. (1995), 'Paradox and performance: Toward a theory of behavioral complexity in managerial leadership,' *Organization Science*, 6, 524-540.
- Denton, D.K. (1999), 'Employee involvement, pollution control and pieces to the puzzle,' *Environmental Management and Health*, 10, 2, 105-111.
- Denzin, N. K. (1978), *Sociological Methods: A Sourcebook*, New York: McGraw- Hill.
- Dietz, G., Wilkinson, A., and Redman, T. (2009), 'Involvement and participation,' in *The Sage Handbook of Human Resource Management*. London: Sage, 245-268.
- Dilchert, S., and Ones, D.S. (2012), 'Measuring and Improving Environmental Sustainability,' in *Managing Human Resources for Environmental Sustainability*, Eds. S.E. Jackson, D.S. Ones, and S. Dilchert. New Jersey: Jossey-Bass, pp. 187-221.
- Dolan, K.A., and Munk, N. (1997), 'Kinder, gentler MBAs,' *Forbes* (June 2), 39-40.
- Drath, W.H., McCauley, C.D., Palus, C.J., Van Velsor, E., O'Connor, P.M.G., and McGuire, J.B.(December, 2008), 'Direction, alignment, commitment: Toward a more integrative ontology of leadership,' *The Leadership Quarterly*, 19, 6, 635-653.
- Drever, E. (1997). *Using semi-structured interviews in small-scale research: A teacher's guide*, Edinburgh: The Scottish Council for Research in Education.
- Dubin, R. (1976), 'Theory building in applied areas,' in *Handbook of industrial and organizational psychology*, ed. M.D. Dunnette, New York: Free Press, pp.17-39.

- Dyer, L., and Reeves, T. (1995), 'Human resource strategies and firm performance: what do we know and where do we need to go?' *International Journal of human resource management*, 6, 3, 656-670.
- Ehnert, I. (2006), 'Sustainability issues in Human Resource Management: Linkages, theoretical approaches, and outlines for an emerging field,' 21st EIASM SHRM Workshop, Aston, Birmingham.
- Ehnert, I. (2009), *Sustainable Human Resource Management: A conceptual and exploratory analysis from a paradox perspective*, Heidelberg: Springer.
- Ehnert, I. (2014), 'Paradox as a lens for theorizing sustainable HRM,' in *Sustainability and Human Resource Management*, eds. I. Ehnert, W. Harry, and K. J. Zink, Berlin Heidelberg: Springer, pp. 247- 271
- Eisenhardt, K. M. (1989), 'Building theories from case study research,' *Academy of management review*, 532-550.
- Eisenhardt, K. M. (2000), 'Paradox, spirals, ambivalence: The new language of change and pluralism,' *Academy of Management Review*, 25, 4, 703-705.
- Eisenhardt, K. M., and Westcott, B. J. (1988), 'Paradoxical demands and the creation of excellence: the case of just-in-time manufacturing,' in *Paradox and transformation: Toward a theory of change in organization and management*, eds. R. E. Quinn and K. S. Cameron, Cambridge, MA: Ballinger, pp. 169-194.
- Elefsiniotis, P., and Wareham, D.G. (2005), 'ISO 14000 environmental management standards: their relation to sustainability,' *Journal of Professional Issues in Engineering Education and Practice*, 131, 3, 208-212.
- Epstein, M. (2008), *making sustainability work: Best practices in managing and measuring corporate social, environmental and economic impacts*, San Francisco: Berrett-Koehler Publishers and Greenleaf Publishing.
- Epstein, M.J., and Roy, M. (2001), 'Sustainability in action: Identifying and measuring the key performance drivers,' *Long Range Planning*, 34, 5, 585-604.
- Erickson, G.W., and Fossa, J.A. (1998), *Dictionary of paradox*, Lanham: University Press of America.
- Etzion, D. (2007), 'Research on organizations and the natural environment, 1992present: A review,' *Journal of Management*, 33, 4, 637-664.
- Evans, P. A. (1999), 'HRM on the edge: a duality perspective,' *Organization*, 6, 2, 25338.
- Evans, P., and Doz, Y. (1991), 'The dualistic organization,' in *Human resource management in international firms: change, globalization, innovation*, 3rd edn, Eds.
- Evans, P., Doz, Y. and Laurent, A., Houndmills: Macmillan, pp. 219-242.
- Evans, P., and Génadry, N. (1999), 'A Duality-Based Prospective for Strategic Human Resource Management,' in *Research in Personnel and Human Resource Management (Supplement 4)*, eds. Patrick M. Wright, Lee D. Dyer, John W. Boudreau, and George T. Milkovich, Greenwich, CT: JAI Press, pp. 367-395.
- Evans, P., Pucik, V., and Barsoux, J. (2002), *The global challenge-frameworks for international human resource management (International Edition)*, McGraw Hill.
- Fernández, E., Junquera, B., and Ordiz, M. (2003), 'Organizational culture and human resources in the environmental issue: a review of the literature,' *International Journal of Human Resource Management*, 14, 4, 634-656.
- Fineman, S. (1997), 'Constructing the green manager,' *British Journal of Management*, 8, 1,

31-38.

- Florida, R. (1996), 'Lean and Green: The Move to Environmentally Conscious Manufacturing,' *California Management Review*, 39, 80–105.
- Florida, R., and Davison, D. (2001), 'Gaining from green management,' *California Management Review*, 43, 3, 63-84.
- Follows, S. B., and Jobber, D. (2000), 'environmentally responsible purchase behaviour: a test of a consumer model,' *European journal of Marketing*, 34, 5/6, 723746.
- Fombrun, C., and Shanley, M. (1990), 'What's in a name? Reputation building and corporate strategy,' *Academy of management Journal*, 233-258.
- Forman, M., and Jorgensen, M.S. (2001), 'The Social Shaping of the Participation of Employees in Environmental Work within Enterprises: Experiences from a Danish Context,' *Technology Analysis & Strategic Management*, 13, 1, 71–90.
- Fowler, S.J., and Hope, C. (2007), 'Incorporating sustainable business practices into company strategy,' *Business Strategy and the Environment*, 16, 1, 26-38.
- Fransson, N., and Gärling, T. (1999), 'Environmental concern: Conceptual definitions, measurement methods, and research findings,' *Journal of environmental psychology*, 19, 4, 369-382.
- Frohman, A.L. (1999), 'Personal initiative sparks innovation,' *Research-Technology Management*, 42, 3, 32-38.
- Fryxell, G.E., and Lo, C.W. (2003), 'The influence of environmental knowledge and values on managerial behaviors on behalf of the environment: An empirical examination of managers in China,' *Journal of Business Ethics*, 46, 1, 45-69.
- Garvin, D. A. (1993), 'Building a Learning Organization,' *Harvard business review*, 7891.
- Gatersleben, B., Steg, L., and Vlek, C. (2002), 'Measurement and determinants of environmentally significant consumer behavior,' *Environment and Behavior*, 34, 3, 335-362.
- Gatewood, R.D., Gowan, M.A, and Lautenschlager, G.J. (1993), 'Corporate image, recruitment image and initial job choice decisions,' *Academy of Management journal*, 36, 2, 414-427.
- Gebert, D., and Boerner, S. (1999), 'The open and the closed corporation as conflicting forms of organization,' *The Journal of Applied Behavioral Science*, 35, 3, 341-359.
- Gerhart, B., and Milkovich, G.T. (1992), 'Employee compensation: Research and practice,' *Consulting Psychologists Press*.
- Getzner, M. (1999), 'Cleaner production, employment effects and socio-economic development,' *International Journal of Technology Management*, 17, 5, 522-543.
- Gilligan, C. (1982), *In a different voice: Psychological theory and women's development*, Boston: Harvard University Press.
- Gladwin, T. N., Kennelly, J. J., and Krause, T. (1995), 'Shifting paradigms for sustainable development: Implications for management theory and research,' *Academy of management Review*, 20, 4, 874-907.
- Gladwin, T.N. (1993), 'the Meaning of Greening: A Plea for Organizational Theory,' in *Environmental Strategies for Industry: International Perspectives on Research Needs and Policy Implications*, Eds. K. Fischer and J. Schot, Washington DC: Island Press, 37-61.
- Glaser, B. G., and Strauss, A. L. (1967), *The discovery of grounded theory: Strategies for qualitative research*, Aldine de Gruyter.
- Global Environmental Management Initiative (GEMI). (1998), 'Measuring environmental performance: a primer and survey of metrics in



use,' Washington DC: Global Environmental Performance Measurement Initiative.

- Gollan, P.J., and Wilkinson, A. (2007), 'Contemporary developments in information and consultation,' *The International Journal of Human Resource Management*, 18, 7, 1133-1144.
- Govindarajulu, N., and Daily, B.F. (2004), 'Motivating employees for environmental improvement,' *Industrial Management & Data Systems*, 104, 4, 364-372.
- Greening, D.W., and Turban, D.B. (2000), 'Corporate social performance as a competitive advantage in attracting a quality workforce,' *Business & Society*, 39, 3, 254-280.
- Guest, G., MacQueen, K. M., and Namey, E. E. (2012), *Applied thematic analysis*, Thousands Oak, CA: Sage.
- Habisch, A., Patelli, L., Pedrini, M., and Schwarz, C. (2011), 'Different Talks with Different Folks: a Comparative Survey of Stakeholder Dialog in Germany, Italy, and the U.S.', *Journal of Business Ethics*, 100, 381-404.
- Hampden-Turner, C. (1990), *Charting the corporate mind: graphic solutions to business conflicts*, New York: Free Press.
- Handfield, R.B, Sroufe, R., and Walton, S. (2005), 'Integrating environmental management and supply chain strategies,' *Business Strategy and the Environment*. 14, 1, 1-19.
- Handfield, R.B., and Nichols Jr, E.L. (2002), *Supply chain redesign: Transforming supply chains into integrated value systems*, FT Press.
- Handfield, R.B., Ragatz, G.C., Peterson, K.J. and Monczka, R. M. (1999), 'Involving suppliers in new product development,' *California Management Review*, 42, 1, 59-82.
- Handy, C.B. (1994), *the age of paradox*, Boston, MA: Harvard Business School Press.
- Hanna, M.D., Newman, W.R., and Johnson, P. (2000), 'Linking operational and environmental improvement through employee involvement,' *International Journal of Operations & Production Management*, 20, 2, 148-165.
- Hannigan, J.A. (1995), *Environmental sociology: A social constructionist perspective* London: Routledge.
- Hansla, A., Gamble, A., Juliusson, A., and Garling, T. (2008), 'The relationships between awareness of consequences, environmental concern, and value orientations,' *Journal of Environmental Psychology*, 28, 1, 1-9.
- Harris, A. S. (1996), *living with paradox: An introduction to Jungian psychology*, Albany, NY: Brooks/Cole.
- Harris, L.C., and Ogbonna, E. (1998), 'Employee responses to culture change efforts,' *Human Resource Management Journal*, 8, 2, 78-92.
- Hart, S. L., and Milstein, M. B. (2003), 'Creating sustainable value,' *The Academy of Management Executive*, 17, 2, 56-67.
- Hart, S.L. (1995), 'A natural-resource-based view of the firm,' *Academy of management review*, 986-1014.
- Harter, L.M., and Krone, K.J. (2001), 'The boundary-spanning role of a cooperative support organization: managing the paradox of stability and change in non-traditional organizations,' *Journal of Applied Communication Research*, 29, 3, 248-277.
- Hill, L., Ones, D.S., Dilchert, S., Wiernik, B.M., Klein, R.M., and D'Mello, S. (April, 2011), 'Employee green behaviors in Europe: A cross-cultural taxonomic investigation,' *Conference for Industrial and Organizational Psychology*, Chicago, Illinois.
- Hines, J.M., Hungerford, H.R., and Tomera, A. N. (1987), 'Analysis and synthesis of research on responsible environmental behavior: A meta-analysis,' *The Journal of environmental*



education, 18, 2, 1-8.

- Hofstede, G. (2001), *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Thousand Oaks, California: Sage.
- Holton, III.E.F. And Baldwin, T.T. (2003), *Improving learning transfer in organizations*, San Francisco: Jossey Bass.
- Honey, M., and Stewart, E. (2002), 'The evolution of 'green' standards for tourism,' in *Ecotourism and Certification – Setting Standards in Practice*, ed. Honey M., Island Press: Washington DC, 33–71.
- Hoskisson, R. E., Hitt, M. A., Wan, W. P., and Yiu, D. (1999), 'Theory and research in strategic management: Swings of a pendulum,' *Journal of management*, 25, 3, 417-456.
- Hrebiniak, L.G., and Joyce W.F. (1984), *Implementing strategy*, New York: Macmillan.
- Hülsmann, M., and Berry, A. (2004), 'Strategic management dilemmas: Its necessity in a world of diversity and change,' *Proceedings of the SAM/IFSAM VIIIth World Congress on Management in a World of Diversity and Change*, Göteborg, CD-Rom.
- Jabbour, C.J, Santos, F.C.A., and Nagano, M.S. (2010), 'Contributions of HRM throughout the stages of environmental management: methodological triangulation applied to companies in Brazil,' *The International Journal of Human Resource Management*, 21, 7, 1049-1089.
- Jackson, S. E., and Seo, J. (2010), 'The greening of strategic HRM scholarship,' *Organization Management Journal*, 7, 4, 278-290.
- Jackson, S. E., Ones, D. S., and Dilchert, S. (2012), *Managing human resources for environmental sustainability*, New Jersey: John Wiley & Sons.
- Jackson, S.E. (2012), 'Building empirical foundations to inform the future practice of environmental sustainability,' in *Managing human resources for environmental sustainability*, eds. Susan E. Jackson, Deniz S. Ones and Stephan Dilchert, New Jersey: Jossey-Bass, pp. 416-432.
- Jackson, S.E., Renwick, D.W.S., Jabbour, C.J.C., and Muller-Camen, M. (2011), 'State-of-the-art and future directions for green human resource management: introduction to the special issue,' *Zeitschrift für Personalforschung*, 25, 2, 99-116.
- Jackson, S.L. (1997), *The ISO 14001 implementation guide: creating an integrated management system*, Wiley.
- Jaffee, D. (2001), *Organization Theory: Tension and Change*, New York: McGrawHill.
- Jarzabkowski, P., Lê, J., and Van de Ven, A. H. (2013), 'Responding to competing strategic demands: How organizing, belonging, and performing paradoxes coevolve,' *Strategic Organization*, 11, 3, 245-280.
- Jiang, K., Lepak, D.P., Han, K., Hong, Y., Kim, A., and Winkler, A. (2012), 'Clarifying the construct of human resource systems: Relating human resource management to employee performance,' *Human Resource Management Review*, 22, 73-85.
- Johnston, S., and Selsky, J. W. (2006), 'Duality and paradox: Trust and duplicity in Japanese business practice,' *Organization Studies*, 27, 2, 183-205.
- Kabst, R., and Matiaske, W. (2005), 'Editorial: Human Resource Management and Economic Success,' *management revue, The International Review of Management Studies*, 16, 2, 161-163.
- Kaiser, F.G. (1998), 'A General Measure of Ecological Behavior,' *Journal of applied social psychology*, 28, 5, 395-422.
- Katou, A.A. (2008), 'Measuring the impact of HRM on organizational performance,' *Journal*

of Industrial Engineering and Management, 1, 2, 119-142.

- King, A. (1995), 'Innovation from differentiation: pollution control departments and innovation in the printed circuit industry,' *Engineering Management, IEEE Transactions on*, 42, 3, 270-277.
- Kinnear, T.C., Taylor, J.R., and Ahmed, S.A. (1974), 'Ecologically concerned consumers: who are they?' *The Journal of Marketing*, 20-24.
- Kitazawa, S., and Sarkis, J. (2000), 'The relationship between ISO 14001 and continuous source reduction programs,' *International Journal of Operations & Production Management*, 20, 2, 225-248.
- Klassen, R. D., and Whybark, D. C. (1999), 'The impact of environmental technologies on manufacturing performance,' *Academy of Management journal*, 42, 6, 599-615.
- Klein, R., D'Mello, S., and Wiernik, B. (2012), 'Demographic Characteristics and Employee Sustainability,' in *Managing human resources for environmental sustainability*, eds. Susan E. Jackson, Deniz S. Ones and Stephan Dilchert, New Jersey: Jossey-Bass, pp. 117-154.
- Klein, R., D'Mello, S., Ones, D.S., Dilchert, S., Hill, L., and Wiernik, B. (April, 2010), 'Green Motives: Why Employees Engages in Environmentally Friendly Behaviors,' *Conference of the Society for Industrial and Organizational Psychology*, Atlanta, Georgia.
- Klimoski, R. (1992), 'Theory presentation in human resource management,' *Human Resource Management Review*, 1, 4, 253-271.
- Koch, M.J., and MacGrath, R.G. (1996), 'Improving Labor Productivity: Human Resource Management Policies Do Important,' *Strategic Management Journal*, 17, 335-354.
- Kollock, P. (1998), 'Social dilemmas: The anatomy of cooperation,' *Annual review of sociology*, 183-214.
- Kramar, R. (2013), 'Beyond strategic human resource management: is sustainable human resource management the next approach?' *The International Journal of Human Resource Management*, (ahead-of-print), 1-21.
- Kristof, A.L. (2006), 'Person organization fit: An integrative review of its conceptualizations, measurement, and implications,' *Personnel psychology*, 49, 1, 149.
- Kristof, A.L., Zimmerman, R.D., and Johnson, E.C. (2005), 'Consequences of individuals' fit at work: a meta analysis of person-job, person-organization, persongroup, and person-supervisor fit,' *Personnel psychology*, 58, 2, 281-342.
- Krut, R., and Gleckman, H. (1998), *ISO 14001: A missed opportunity for sustainable global industrial development*, London: Earthscan.
- Kulik, C.T., and Roberson, L. (2008), 'Common goals and golden opportunities: Evaluations of diversity education in academic and organizational settings,' *Academy of Management Learning & Education*, 7, 3, 309-331.
- Lado, A. A., Boyd, N. G., Wright, P., and Kroll, M. (2006), 'Paradox and theorizing within the resource-based view,' *Academy of Management Review*, 31, 1, 115-131.
- Ladyman, J. (2002), *Understanding philosophy of science*, London: Routledge.
- Lawrence, P., and Lorsch, J. (1967), *Organizations and environment: Managing differentiation and integration*. Homewood, IL: Irwin.
- Le Blansch, K.L., and Lorentzen, B. (1996), 'Do workers and trade unions have a role to play in environmental protection? Results from case studies in companies in European countries,' *Transfer: European Review of Labour and Research*, 2, 449-464.
- Legge, K. (1978), *Power, innovation, and problem-solving in personnel management*,

London: McGraw-Hill.

- Legge, K. (2005), *Human Resource Management: Rhetorics and Realities*, Anniversary Edition, Hampshire: Palgrave MacMillan.
- Leonard-Barton, D. (1992), 'Core capabilities and core rigidities: A paradox in managing new product development,' *Strategic management journal*, 13, 111-125.
- Lepak, D. P., Liao, H., Chung, Y., and Harden, E. E. (2006), 'A conceptual review of human resource management systems in strategic human resource management research,' *Research in personnel and human resources management*, 25, 217-271.
- Lewis, M. W. (2000), 'Exploring paradox: Toward a more comprehensive guide,' *Academy of Management Review*, 25, 4 760-776.
- Lubin, D.A., and Esty, D.C. (2010), 'The sustainability imperative,' *Harvard Business Review*, 88, 5, 42-50.
- Luhmann N. (1995), *Social systems*, Stanford, CA: Stanford University Press.
- MacDuffie, J.P. (1995), 'Human Resource Bundles and Manufacturing Performance: Organizational Logic and Flexible Production Systems in the World Auto Industry,' *Industrial and Labor Relations Review*, 48, 197-221.
- Macey, W.H., and Schneider, B. (2008), 'The meaning of employee engagement,' *Industrial and Organizational Psychology*, 1, 1, 3-30.
- Macky, K., and Boxall, P. (2007), 'The relationship between 'high-performance work practices' and employee attitudes: an investigation of additive and interaction effects,' *The International Journal of Human Resource Management*, 18, 4, 537-567.
- Madsen, H., and Ulhoi, J.P. (2001), 'Greening of human resources: environmental awareness and training interests within the workforce,' *Industrial Management & Data Systems*, 101, 2, 57-65.
- Mandip, G. (2012), 'HRM Green: People Management Commitment to Environmental Sustainability,' *Research Journal of Recent Sciences*, 1, 244-252.
- March, J. G., and Simon, H. A. (1993), *Organizations*, Oxford: Blackwell.
- Marchington, M., and Wilkinson, A. (2005), 'Direct participation and involvement,' in *Managing Human Resources: Personnel Management in Transition* (4th edn.) ed. Stephen Bach, Oxford: Blackwell, 398-423.
- Margolis, J. D., Elfenbein, H. A., and Walsh, J. P. (2007), *Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance*, Boston: Mimeo, Harvard Business School.
- Marshall, R. S., and Brown, D. (2003), 'The Strategy of Sustainability: A Systems Perspective on Norm Thompson Outfitters' Environmental Stewardship Initiatives,' *California Management Review*, 46, 101-126.
- Martínez- del- Río, J., Céspedes- Lorente, J., and Carmona- Moreno, E. (2012), 'High-involvement work practices and environmental capabilities: How HIWPS create environmentally based sustainable competitive advantages,' *Human Resource Management*, 51, 6, 827-850.
- Mathieu, J.E., and Zajac, D.M. (1990), 'A review and meta-analysis of the antecedents, correlates, and consequences of organizational commitment,' *Psychological bulletin*, 108, 2, 171-194.
- May, D.R., and Flannery, B.L. (1995), 'Cutting waste with employee involvement teams,' *Business Horizons*, 38, 5, 28-38.

- Mayrhofer, W., Sparrow, P., and Brewster, C. (2012), 'European Human Resource Management: a contextualized stakeholder approach,' in Handbook on research on comparative human resource management, eds. C. Brewster and W. Mayrhofer, UK: Edward Elgar Publishing Limited, 528-549.
- McAdam, D., McCarthy, J.D., and Zald, M.N. (1988), 'Social movements' in Handbook of sociology, ed. Smelser, N., 659-737
- McEvoy, III.J. (1972), 'The American concern with the environment,' in Social behavior, natural resources and the environment, eds. W.B. Burch, Jr., N.H. Check & L. Taylor, New York, NY: Harper and Row.
- McWilliams, A., and Siegel, D. (2001), 'Corporate social responsibility: A theory of the firm perspective,' Academy of Management Review, 25, 117-127.
- Merriman, K. K., and Sen, S. (2012), 'Incenting managers toward the triple bottom line: An agency and social norm perspective,' Human Resource Management, 51, 6, 851871.
- Mesmer-Magnus, J., Viswesvaran, C., and Wiernik, B.M. (2012), 'The Role of Commitment in Bridging the Gap Between Organizational Sustainability and Environmental Sustainability.' in Managing Human Resources for Environmental Sustainability, eds. Susan E. Jackson, Deniz S. Ones and Stephan Dilchert, New Jersey: Jossey-Bass, pp. 155-186.
- Meyer, J.P., Stanley, D.J, Herscovitch, L., and Topolnytsky, L. (2002), 'Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences,' Journal of vocational behavior, 61, 1, 2052.
- Meyer, J.W., and Rowan, B. (1977), 'Institutionalized organizations: Formal structure as myth and ceremony,' American journal of sociology, 340-363.
- Miles, M. B., and Huberman, A. M. (1994), Qualitative data analysis: An expanded sourcebook, Thousand Oaks, CA: Sage.
- Milliman, J., and Clair, J. (1996), 'Best Environmental HRM Practices in the US,' in Greening People. Human Resources and Environmental Management, ed. W. Wehrmeyer, Sheffield: Greenleaf Publishing.
- Mintzberg, H. (1973), The nature of managerial work, New York: Harper and Row.
- Mohai, P. (1992), 'Men, women, and the environment: an examination of the gender gap in environmental concern and activism,' Society & Natural Resources, 5, 1, 1-19.
- Möllering, G. (2005), 'The Trust/Control Duality An Integrative Perspective on Positive Expectations of Others,' International sociology, 20, 3, 283-305.
- Morris, M.G., and Venkatesh, V. (2000), 'Age differences in technology adoption decisions: Implications for a changing work force,' Personnel psychology, 53, 2, 375403.
- Morrison, D.E., Hornback, K.E., and Warner, W.K. (1972), 'The environmental movement: Some preliminary observations and predictions,' in Social behavior, Natural Resources and the Environment, eds. L. Taylor, N.H. Cheek and W. Burch, New York: Harper and Row, pp. 259-279.
- Morrow, D., and Rondinelli, D. (2002), 'Adopting Corporate Environmental Management Systems: Motivations and Results of ISO 14001 and EMAS Certification,' European Management Journal, 20, 2, 159-171.
- Müller-Christ, G. (2011), Sustainable Management: Coping with the Dilemmas of Resource-oriented Management, Springer.
- Nelson, R. E. (2001), 'On the shape of verbal networks in organizations,' Organization Studies, 22, 5, 797-823.

- O'Dell, C., and Grayson, C. J. (1998), 'If only we knew what we know: identification and transfer of internal best practices,' *California management review*, 40, 154-174.
- Ofori-Dankwa, J., and Julian, S. D. (2004), 'Conceptualizing social science paradoxes using the diversity and similarity curves model: Illustrations from the work/play and theory novelty/continuity paradoxes,' *Human Relations*, 57, 11, 1449-1477.
- Ölander, F., and Thøgersen, J. (1995), 'Understanding of consumer behavior as a prerequisite for environmental protection,' *Journal of Consumer Policy*, 18, 4, 345-385.
- Organ, D. W. (1971), 'Linking pins between organizations and environment: Individuals do the interacting,' *Business Horizons*, 14, 6, 73-80.
- Örtqvist, D., and Wincent, J. (2006), 'Prominent consequences of role stress: A metaanalytic review,' *International Journal of Stress Management*, 13, 4, 399-422.
- Osborn, R.N., Hunt, J.G., and Jauch, L.R. (2002), 'Toward a contextual theory of leadership,' *The Leadership Quarterly*, 13, 6, 797-837.
- Paauwe, J. (2004). *HRM and performance: Achieving long-term viability*, USA: Oxford University Press.
- Paauwe, J. (2009), 'HRM and Performance: Achievements, Methodological Issues and Prospects,' *Journal of Management Studies*, 46, 1, 129-142.
- Panayotopoulou, L., Bourantas, D., and Papalexandris, N. (2003), 'Strategic human resource management and its effects on firm performance: an implementation of the competing values framework,' *International Journal of Human Resource Management*, 14, 4, 680-699.
- Paul, A.K., and Anantharaman, R.N. (2003), 'Impact of people management practices on organizational performance: analysis of a causal model,' *International Journal of Human Resource Management*, 14, 7, 1246-1266.
- Perrini, F., Pogutz, S., and Tencati, A. (2006), 'Corporate social responsibility in Italy: State of the Art,' *Journal of Business Strategies*, 23, 1-44.
- Perrini, F., Russo, A., and Tencati, A. (2007), 'CSR strategies of SMEs and large firms. Evidence from Italy,' *Journal of Business Ethics*, 74, 285-300.
- Peters, T. J. and Waterman, R.H., Jr. (1982), *Search of excellence: Lessons from America's best-run companies*.
- Philott, J., and Davies, G. (2009), 'Labour Market Outlook,' *Quarterly Survey Report*, Summer, London: CIPD/KPMG, 1-22.
- Poole, M. S., and Van de Ven, A. H. (1989), 'Using paradox to build management and organization theories,' *Academy of management review*, 14, 4, 562-578.
- Porter, M., and Kramer, M. (2011), 'Creating shared value,' *Harvard Business Review*, 89, 1/2, 62-77.
- Pratt, M.G., and Dutton, J.E. (2000), 'Owning up or opting out: the role of emotions and identities in issue ownership,' in *Emotions in the Workplace: Research, Theory, and Practice*, Eds. Ashkanasy, N.M., Hartel, C.E.J. and Zerbe, W.J. , Westport, CT: Quorum Books, 103-129.
- Probst, G., and Raisch, S. (2005), 'Organizational crisis: The logic of failure,' *The Academy of Management Executive*, 19, 1, 90-105.
- Quinn, L., and Van Velsor, E. (2010), 'Developing globally responsible leadership,' *The Center for Creative Leadership handbook of leadership development*, 122, 345.
- Ragatz, G.L., Handfield, R.B., and Petersen, K.J. (2002), 'Benefits associated with supplier integration into new product development under conditions of technology uncertainty,'



Journal of Business Research, 55, 5, 389-400.

- Ramus, C. A., and Killmer, A. B. (2007), 'Corporate greening through prosocial extrarole behaviours—A conceptual framework for employee motivation,' *Business Strategy and the Environment*, 16, 8, 554-570.
- Ramus, C. A., and Steger, U. (2000), 'The Roles of Supervisory Support Behaviors and Environmental Policy in Employee "Ecoinitiatives" at Leading-Edge European Companies,' *Academy of Management journal*, 43, 4, 605-626.
- Ramus, C.A. (2001), 'Organizational Support for Employees: Encouraging Creative Ideas for Environmental Sustainability,' *California Management Review*, 43, 3, 85–105.
- Regnér, P. (2003), 'Strategy creation in the periphery: Inductive versus deductive strategy making,' *Journal of Management Studies*, 40, 1, 57-82.
- Remmen, A., and Lorentzen, B. (2000), 'Employee participation and cleaner technology: learning processes in environmental teams,' *Journal of Cleaner Production*, 8, 5, 365-373.
- Rendell, E.G., and McGinty, K.A., (2004), *Environmental Management Systems, A Guidebook for Improving Energy and Environmental Performance in Local Government*, Five Winds International.
- Renwick, D. W., Redman, T., and Maguire, S. (2013), 'Green Human Resource Management: A Review and Research Agenda,' *International Journal of Management Reviews*, 15, 1, 1-14.
- Rettab, B., Brik, A.B., and Mellahi, K. (2009), 'A study of management perceptions of the impact of corporate social responsibility on organizational performance in emerging economies: the case of Dubai,' *Journal of Business Ethics*, 89, 3, 371-390.
- Richman-Hirsch, W.L., Olson-Buchanan, J.B., and Drasgow, F. (2000), 'Examining the impact of administration medium on examinee perceptions and attitudes,' *Journal of Applied Psychology*, 85, 6, 880-887.
- Riketta, M., and Dick, R. V. (2005), 'Foci of attachment in organizations: A metaanalytic comparison of the strength and correlates of workgroup versus organizational identification and commitment,' *Journal of Vocational Behavior*, 67,3, 490-510.
- Riordian, C.M., Vandenberg, R.J., and Richardson, H.A. (2005), 'Employee involvement climate and organizational effectiveness,' *Human Resource Management*, 44, 4, 471-848.
- Roberts, B.W., Walton, K.E., and Viechtbauer, W. (2006), 'Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies,' *Psychological bulletin*, 132, 1, 1-25.
- Roberts, J.A. (1996), 'Green consumers in the 1990s: profile and implications for advertising,' *Journal of Business Research*, 36, 3, 217-231.
- Rondinelli, D., and Vastag, G. (2000), 'Panacea, common sense, or just a label?: The value of ISO 14001 environmental management systems,' *European Management Journal*, 18, 5, 499-510.
- Rothenberg, S. (2003), 'Knowledge content and worker participation in environmental management at NUMMI,' *Journal of Management Studies*, 40, 7, 1783-1802.
- Rothman, J., and Friedman VJ. (2001), 'Identity, conflict, and organizational learning,' in *Handbook of Organizational Learning and Knowledge*, Eds. Dierkes M, Berthoin Antal A, Nonaka I, Child J, Oxford University Press: Oxford, pp. 582–597.
- Russell, S.V., and Griffiths, A. (2008), 'The role of emotions in driving proenvironmental behaviours,' in *Managing Emotions in the Workplace*, Eds. Zerbe, W., Ashkanasy, N.M. and Härtel, C.E.J., New York: Sharpe,83–107.

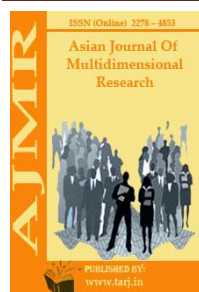


- Russo, A., and Tencati, A. (2009), 'Formal vs. informal CSR strategies: Evidence from Italian micro, small, medium-sized and large firms', *Journal of Business Ethics*, 85,339-353.
- Russo, M.V., and Fouts, P.A. (1997), 'A Resource-Based Perspective on Corporate Environmental Performance and Profitability,' *Academy of management Journal*, 40, 3, 534-559.
- Ryan, G. W., and Bernard, H. R. (2003), 'Techniques to identify themes,' *Field methods*, 15, 1, 85-109.
- Saks, A.M., Uggerslev, K.L., and Fassina, N.E. (2007), 'Socialization tactics and newcomer adjustment: A meta-analytic review and test of a model,' *Journal of Vocational Behavior*, 70, 3, 413-446.
- Samdahl, D.M., and Robertson, R. (1989), 'Social determinants of environmental concern specification and test of the model,' *Environment and Behavior*, 21, 1, 57-81.
- Savickas, M.L., Nota, L., Rossier, J., Dauwalder, J., Duarte, M.E. and Guichard, J. (2009), 'Life designing: A paradigm for career construction in the 21st century,' *Journal of Vocational Behavior*, 75, 3, 239-250.
- Savitz, A.W., and Weber, K. (2006), *The triple bottom-line: How today's best-run companies are achieving economic, social, and environmental success- and how you can too*, San Francisco: Jossey-Bass.
- Schuler, R.S., and Jackson, S.E. (1987), 'Linking competitive strategies with human resource management practices,' *The Academy of Management Executive*, 1, 3, 207-219.
- Schuler, R.S., Jackson, S.E., and Storey, J. (2001), 'HRM and its link with strategic management,' in *Human resource management: A critical text*, ed. J. Storey, London: Thomson Learning, 114-130.
- Schwandt, T. A. (1994), 'Constructivist, interpretivist approaches to human inquiry,' in *Handbook of qualitative research*, eds. N. K. Denzin and Y. S. Lincoln, Thousand Oaks, CA: Sage, pp. 118-137.
- Schwartz, S.H. (1997), 'Normative Influences on Altruism1,' *Advances in experimental social psychology*, 10, 221-279.
- Senge, P. (1991), *The fifth discipline: the art and practice of the learning organization*, New York: Doubleday.
- Senge, P., and Carstedt, G. (2001), 'Innovating our way to the next industrial evolution,' *MIT Sloan Management Review*, 42, 2, 24-38.
- Shrivastava, P. (1994), 'Castrated environment: Greening organizational studies,' *Organization Studies*, 15, 5, 705-726.
- Siebenhüner, B., and Arnold, M. (2007), 'Organizational learning to manage sustainable development,' *Business strategy and the environment*, 16, 5, 339-353.
- Singh, R. K., Murty, H., Gupta, S., and Dikshit, A. (2007), 'Development of composite sustainability performance index for steel industry,' *Ecological Indicators*, 7, 3, 565-588.
- Smith, W. K., and Lewis, M. W. (2011), 'toward a theory of paradox: A dynamic equilibrium model of organizing,' *Academy of Management Review*, 36, 2, 381-403.
- Smith, W. K., and Lewis, M. W. (2011), 'toward a theory of paradox: A dynamic equilibrium model of organizing,' *Academy of Management Review*, 36, 2, 381-403.
- Snow, C. C., and Thomas, J. B. (2007), 'Field research methods in strategic management: Contributions to theory building and testing,' *Journal of Management Studies*, 31, 4, 457-480.
- Spradley, J. P. (1979), *The ethnographic interview*, New York: Holt, Rinehart and Winston.

- Staffelbach, B., Brugger, E.A., and Bähler, S. (2012), 'The Role of Strategic Context in Environmental Sustainability Initiatives: Three Case Studies,' in *Managing human resources for environmental sustainability*, eds. Susan E. Jackson, Deniz S. Ones and Stephan Dilchert, New Jersey: Jossey-Bass, pp. 36-60.
- Stapleton, P.J., Cooney, A.M., and Hix, W.M. (1996), *Environmental Management Systems: an implementation guide for small and medium-sized organizations*, NSF International, Ann Arbor.
- Stapleton, PJ, Glover, M.A., and Davis, S.P. (2001), *Environmental Management Systems: An Implementation Guide for Small and Medium-Sized Organizations*, NSF International, Ann Arbor.
- Starik, M., and Rands, G.P. (1995), 'Weaving an integrated web: multilevel and multisystem perspectives of ecologically sustainable organizations,' *Academy of Management Review*, 20, 4, 908-935.
- Starkey, K., and Crane. A. (2003), 'Toward Green Narrative: Management and Evolutionary Epic,' *Academy of Management Review*, 28, 2, 220-237.
- Steg, L., and Vlek, C. (2009), 'Encouraging pro-environmental behavior: An integrative review and research agenda,' *Journal of Environmental Psychology*, 29, 3, 309-317.
- Stern, P. C. (1992), 'Psychological dimensions of global environmental change,' *Annual review of psychology*, 43, 1, 269-302.
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., and Kalof, L. (1999), 'A value- beliefnorm theory of support for social movements: The case of environmentalism,' *Human ecology review*, 6, 2, 81-98.
- Stern, P.C, and Gardner, G.T. (1981), 'Psychological research and energy policy,' *American Psychologist*, 36, 4, 329-342.
- Stern, P.C. (2000a), 'Psychology and the science of human-environment interactions,' *American Psychologist*, 55, 5, 523-550.
- Stern, P.C. (2000b), 'toward a coherent theory of environmentally significant behavior,' *Journal of Social Issues*, 56, 407-424.
- Strassner, K., and Wood, D.W. (2009), *the engaged organization: Corporate employee environmental education survey and case study findings*, Washington, DC: National Environmental Education Foundation.
- Stringer, L. (2009), *The Green Workplace: Sustainable Strategies that Benefit Employees, the Environment, and the Bottom Line*, New York: Palgrave Macmillan.
- Sydow, J., and Windeler, A. (2003), 'Knowledge, trust, and control: Managing tensions and contradictions in a regional network of service firms,' *International Studies of Management and Organization*, 33, 2, 69-100.
- Taylor, S., Osland, J., and Egri, C. P. (2012), 'Guest editors' introduction: Introduction to HRM's role in sustainability: Systems, strategies, and practices,' *Human Resource Management*, 51, 789-798.
- Thøgersen, J. (2005), 'How may consumer policy empower consumers for sustainable Lifestyles?' *Journal of Consumer Policy*, 28, 2, 143-177.
- Turban, D.B., and Greening, D.W. (1997), 'Corporate social performance and organizational attractiveness to prospective employees,' *Academy of Management Journal*, 40, 3, 658-672.
- Van de Ven, A. H. (2007), *Engaged scholarship: A guide for organizational and social research*, OUP Oxford.

- Van Veslor, E., & Quinn, L. (2012), 'Leadership and Environmental Sustainability,' in *Managing Human Resources for Environmental Sustainability*, eds. Susan E. Jackson, Deniz S. Ones and Stephan Dilchert, New Jersey: Jossey-Bass, pp. 241-260.
- Vidal- Salazar, M. D., Cordon- Pozo, E., and Ferrón- Vilchez, V. (2012), 'Human resource management and developing proactive environmental strategies: The influence of environmental training and organizational learning,' *Human Resource Management*, 51, 6, 905-934.
- Vince, R., and Broussine, M. (1996), 'Paradox, defense and attachment: Accessing and working with emotions and relations underlying organizational change,' *Organization Studies*, 17, 1, 1-21.
- Walls, J.L., Phan, P.H., and Berrone, P. (2011), 'Measuring environmental strategy: construct development, reliability, and validity,' *Business & Society*, 50, 1, 71-115.
- Watzlawick, P., Weakland, J H. and Fisch, R. (1974), *Change: Principles of problem formation and problem solution*, New York: Norton.
- Weber, W., and Kabst, R. (2006), 'Human resource management: the need for theory and diversity,' *management revue. The International Review of Management Studies*, 15, 2, 171-177.
- Wee, Y.S., and Quazi, H.A. (2005), 'Development and validation of critical factors of environmental management,' *Industrial Management & Data Systems*, 105, 1, 96-114.
- Wehrmeyer, W. (1996), *Greening People: Human Resources and Environmental Management*, Sheffield: Greenleaf Publishing.
- Wehrmeyer, W., and Vickerstaff, S. (1996), 'Analysis for Environmental Training Needs,' in *Greening People, Human Resources and Environmental Management*, Ed. W. Wehrmeyer, Sheffield: Greenleaf Publishing.
- Weick, K. E. (2002), 'Puzzles in organizational learning: an exercise in disciplined imagination,' *British journal of management*, 13, 2, 7-15.
- Welbourne, T.M. (2011), 'Researchers and change: Implications for publishing,' *Human Resource Management*, 50, 4, 449-450.
- Westenholtz, A. (1993), 'Paradoxical thinking and change in the frames of reference.' *Organization Studies*, 14, 1, 37-58.
- Wilkinson, A., Hill, M., and Gollan, P. (2001), 'The sustainability debate,' *International Journal of Operations & Production Management*, 21, 12, 1492-1502.
- Wilms, W.W., Hardcastle, A.J., and Zell, D.M. (1994), 'Cultural transformation at NUMMI,' *Sloan Management Review*, 36, 99-113.
- Wolfe, A., and Howes, H.A. (1993), 'Measuring Environmental Performance: Theory and Practice at Ontario Hydro,' *Total Quality Environmental Management*, 355-366.
- Wolfers, J. (2006), 'Diagnosing discrimination: Stock returns and CEO gender,' *Journal of the European Economic Association*, 4, 2- 3, 531-541.
- Woodside, G., Aurricchio, P., and Yturri, J. (1998, May 1), *ISO 14001 implementation manual*, McGraw-Hill.
- Wright, P. M., and Snell, S. A. (2005), 'Partner or guardian? HR's challenge in balancing value and values,' *Human Resource Management*, 44, 2, 177-182.
- Wright, P.M., McCormic, B., Sherman, S., and McMahan, G. (1999), 'The Role of Human Resource Practices in Petro-Chemical Refinery Performance,' *International Journal of Human Resource Management*, 10, 4, 551-571.

- Yin, R. K. (2003), Case study research: Design and methods (3rd ed.), Thousand Oaks, CA: Sage.
- Yin, R. K. (2003), Case study research: Design and methods (3rd ed.), Thousand Oaks, CA: Sage.



## DUAL CAREER COUPLE'S PROBLEMS AND COPING STRATEGIES IN BALANCING WORK AND LIFE IN DIFFERENT SECTORS IN INDIAN PERSPECTIVE

**Alita Beniwal\*; Dr. Tripti Bisawa\*\***

\*Research Scholar,  
The IIS University,  
Department of commerce and Management,  
Jaipur (Raj.), INDIA.  
Email id: binubhagsar@gmail.com

\*\*Associate Professor,  
Dept. of Management,  
ISIM, Jaipur (Raj.), INDIA.  
Email id: Tripti\_rsharma@yahoo.co.in

### ABSTRACT

*In India, research studies on work life balance in dual-career couples are still a new concept. Dual career couples appear to be a growing part of the work force today. Women in dual career couple face more challenges to perform better at professional front along with active engagement in personal life. The increasing job demands and family responsibilities of dual career couple leave them with less time for themselves. This is affecting their physical, emotional and social well-being. Thus, in order to lead a good quality of life it becomes a prerequisite for dual career couples to maintain a good balance at both personal and professional front. Previous researcher studies propose that, the difficulties faced by working women, in a dual career couple, comprise of non-flexible work-schedule, male-dominating partner, profession versus family dilemma etc. Each couple has different dynamics, dependent on their demographics. This paper is an attempt to explore the challenges faced by dual career couples in maintaining a balance between their personal and professional life. In this paper, an effort has been made to provide an overview of various aspects of Work-Life Balance of dual career couples through the review of existing literature. The source of data collection included various books, journals, doctoral thesis, working papers, reports, magazines, internet sites, newspapers and articles etc. and has been reflected as references at the end of this research paper.*

**KEYWORDS:** *Dual Career Couple, Work Life Balance, Quality of Work Life.*

---

## **INTRODUCTION**

### **DUAL CAREER COUPLES**

The couples employed in same or different organization with a drive to fulfill career goals and aspirations achieve their objectives are recognized as dual-career couples. The term Dual career indicates the couples, where both partners are working in the same or different organizations and are concerned with profession commitments. Dual-career couples represent a growing trend of workforce in all work sectors.

‘Dual-career’ term was first devised in 1969 by a European academic couple, Rapoport & Rapoport (1969), Rapoport & Rapoport (1971). Both partners in dual-career couples pursue a profession which occupies professional jobs which are distinguished on the basis of a high level of commitment and a career growth sequence. Changing family dynamics are categorized by emerging social and economic trends. Today’s work force comprises of nearly 50% of dual-earner families and 20% of traditional wage earner families.

### **WORK LIFE BALANCE**

The expression “work-family balance” was first coined in UK in late 1970s which describes balance between an individual’s occupational and personal life. The term ‘work family balance’ has been changed to ‘work-life balance’ in changing times which recognizes that people have numerous roles in their personal and vocational life to accomplish in the form of diverse goals other than household. Still, the definition of “work-life balance (WLB)” remains inconsistent till date. Kallithea and Brough (2008) in this regard, has stated that, “despite the contradiction in the definition, a large part of literature has defined work-life balance as being either the absence of work-life conflict or work-life spillover”

Work-life balance is basically a kind of ‘satisfaction and good functioning at work and at home with a minimum of role conflict’. In India, researchers have found four fundamental dimensions of the quality of work life at workplace by observing the perceptions of Indian employees such as

- 1) Favorable work environment and Supportive management
- 2) Scope for Individual growth and autonomy in decision making
- 3) Nature of the occupation
- 4) Motivation opportunities and friendly colleagues

The ‘four factor’ model of Rao and Mohan (2008) defines that Indian employee’s viewpoint of a superior work life is one which is free from harmful effects on personal life and also absence of inappropriate work stresses. Work-Life Balance refers to the expert organization of accountability at the place of work and other responsibilities of the personal life that are very important to individuals. In a model situation, there should be a perfect equilibrium between time spent at work and home, but in actuality this seems to be impracticable. In today’s scenario the innovations and accelerated growth have resulted in stressful, longer working- hours and ever-increasing expectations of the organisation on skilled and executive employees. With more time spent at work, less quality time remains available for the family, causing conflicts not only in the personal life but also resulting in poor health of employees.



The liberal view of society has further changed the statistics of workplace, as huge numbers of women have joined labour force and are now accomplishing the twin task i.e. of a wage earner and a homemaker. The above said fact was further validated by Subramanian, Geeta Balasundaram, Ali and Ershad (2001) that the growth process underwent vital changes and the global economical development had a major bearing on the employment proportion of both men and women. As a result, female work force involvement has increased in last two decades in advanced and emerging countries. With increase of female participation in work force, it becomes difficult for women to manage work and home simultaneously and they had to choose between their career or family. This social change also brought about a pressure on men to contribute at home. The society is also experiencing the changes in the domestic sphere like, nuclear families, single parent, dual earner couples, partner placed at different sites and these changes have added to difficulties generally faced by working professionals. Globalization and Economic liberalization have brought another viewpoint to this entire scene, as an increased financial comfort and flexibility has lead to an increasing emphasis on leisure activities, like traveling, socializing, pursuing hobbies, taking up adventure sports etc. This increase in demand for available time puts further pressure and thus leads to frustration for people who are unable to accomplish their leisure.

## **REVIEW OF LITERATURE**

### **Work-life balance in dual career couples in India**

In recent years, a considerable body of research has developed on dual-career families as a specific type of dual-earner family (Smith, 1992b). Research studies carried out on the practicality of this specific lifestyle have acknowledged the pressures and stresses essential in handling numerous roles of work, career and family, and the inference for fulfillment both at work and at home (Rapoport & Rapoport, 1971, 1980; Sekaran, 1982, 1983, 1989). Current studies have focused on the difficulties of role conflict and overwork, and their impact on individual and work satisfaction, and career growth of both partners (Hertz, 1986; Smith, 1994a, Pierce, 1997). Partners in dual career couples practice two fold loyalties to household and profession (Smith, 1992a). The outcome of these problems arises in the form of negative consequences for individual relations and unique adjustment difficulties for both the couple and their engaging organisations (O'Neil, Fishman and Kinsella-Shaw, 1987). The growing research on work-family (Smith and Pike, 1994) has focused on the significance of organisational efficacy for suitable employer provisions for career and family management in the recent years. Work and family domain are inseparable part of each other, and what happens to a person during the course of work is determined by environment of workplace (Kanter, 1977a). Strains in one domain are unavoidably shifted to the other. Therefore, dual careers have developed a central thought for human resource experts (Sekaran, 1986; Nicholson and West, 1988; Scase and Goffee, 1989; Smith, 1994b, Smith and Still, 1996). However, the determined "myth of separate worlds" (Kanter, 1977b, p.115) inspires many owners to act as if the employee's family domain does not exist (Hertz, 1986; Smith, 1994a).

Research studies in India in 1970s and 1980s has been mainly based on "role conflict" of educated employed women who faces the opposing demands of family and work. But, the succeeding research in 1990s has clearly projected strong mediating factors of work-family conflict as are: - non-division of household duties, unhelpful spouse and societal expectations, insufficient child-care provisions, and long-distance commuting to the workplace. Henceforth it is evident from these studies that women are significantly more vulnerable to the ill-effects of

work-family stress. Some social research also discovered the scope of male participation in the work-family relationship. Studies shows that when both partners of dual career couple are engaged in child-care, fathers spend more quality time with their children than in single-career families, and some studies also stated that husbands of women working full time experienced higher role stress and displayed more stress in comparison to those whose wives were working part-time. Therefore, a dual-career status does not essentially imply husbands support in family duties, helpful relationship and emotional support in urban married couples. Hence, it has been suggested by the stalwarts in (Indian psychological research community) that it's a correct time to enlarge research outside the urban educated middle-class people to get a reliable depiction of work-family conflict as practiced by people in both planned and unplanned sector in India.

### **OBJECTIVES OF THE STUDY**

This paper focuses on key dimensions of the dual-career families of different sectors such as IT sector, Medical sector and academics sector. Literature on earlier studies provides the various areas of quality of work life and characteristics of dual-career couples in the form of professional demands, division of household responsibilities, childcare, and financial division of labor. This study is specifically designed in a view point to achieve following objectives: -

1. To find out the challenges faced by the dual career couples in different sectors and significant difference between types of organisational policies and dual career couple's work-life balance.
2. To study whether there is significant gap among the female and male in dual career couple with respect to their quality of work life.
3. To explore some measures and coping strategies in overcoming these challenges to improve quality of work life in dual-Career couples.

At the same time, present study observes that how married working-women in the second decade of the 21st century has successfully balanced their careers along with family and tackle the challenges they face in this mediating process. This information will not only help working-women to better balance competing demands, but it could also act as indication for companies as to why family-friendly workplace policies should be important. To sum up, this study is designed to find a broader view of the work-family interface among Indian dual career couples in different sectors.

### **RESEARCH METHODOLOGY**

The present study comprises of exploratory research on the concerned areas relating to difficulties faced by dual career couples in maintaining work life balance. The study examines the latest concepts in management to draw attention to the situation in context of such difficulties and tried to suggest some measures and coping strategies to overcome them.

### **DATA COLLECTION**

The present study has been conducted primarily using secondary data resources in the form of existing literature such as newspapers, magazines, journals and online sources such as websites, blogs and articles.

### **CHALLENGES FACED BY DUAL CAREER COUPLES IN DIFFERENT SECTORS**

1. **Dual career couples in Medical sector.**

It has been generally observed that preserving equilibrium between work and family is most neglected area in the life of individuals. The aim of this article is to study the work life balance of dual working couple in Medical Sector and to discover the connection between individual variables like gender, age and marital status with work life balance. In today's competitive and ever-changing workplace, striking a cord between responsibility at work and home becomes an extremely difficult job. The nature of job in medical sector is highly service oriented which make these professionals face work life balance problem of higher degree. The concept of work-life balance is not much explored in medical sector with consideration of dual career couples. According to researchers there is no correlation between gender, age and work life and personal life among dual career couples in medical sector, possibly as the people working in this profession are fully dedicated and loyal towards their work they are able to accomplish work related tasks and household responsibilities with equal ease

The various studies indicate that in Medical Sector partners of dual career couple maintains balance between their private and professional life even if they are busy in their respective work. In the study it was observed that, a decent balance is preserved between work and life among dual career couples in medical sector in spite of long work hours. No main variances found between males and females in accordance to their work life balance.

## **2. Dual career couples in Academic sector**

In academics dual career couples face a distinctive set of challenges. These couples have to combine the everyday pressures with specific challenges of working as a faculty member. The first challenge they come across is the unique job search and finding two positions. The second challenge for faculty couple is to both make it through the tenure. The next challenge they face is to get advancement opportunities. Besides, the couple has to work together to build up a work/life balance plan in order to create a healthy and happy environment of mutual understanding to achieve their common goals.

Today's work environment involves increasing number of dual career couples where both partners work full-time. Dual career couples face a different set of challenges than couples with single-income. Dual career faculty couple has to overcome the challenge of the tenure process and advancing in a less flexible system than many industrial jobs. At times the dual career condition is more complicated because of the distant location of the universities that does not provide the other professional opportunities outside that university.

## **3. Dual career couples in IT sector**

According to research studies, the first major IT reform by the Indian government was the creation of corporation called STPI (Software Technology Parks in India). The Indian IT sector got rise at gain of nearly 50% every year. Today India is known as the IT hub of the world. It has provided employment to more than 30 lakhs Indians and has become a source of Income for more than 2 crore Indians indirectly.

It's quite evident from the rising work-life challenges faced by dual career couple that enlarged working hours, physical and emotional stress, time conflicts and working overtime leads to work-family conflict. Therefore, to deal with such situation, various coping strategies have been adopted by dual career couples working in IT sector. These strategies include active utilization of collective resources in response to work pressure of daily life. They are now more inclined to healthy coping strategies such as elderly parent support, household helper support, employer's

support and organization supportive work-life balance policies (Banwell Wilson (2006)). Many research studies even concluded that high level of spouse support leads to the higher level of job satisfaction among dual career couple. Research shows that dual career couples in IT sectors practices both productive strategies such as training children to be independent, spousal support, job sharing, time management, adjusting role task, personal role redefinition, prioritising roles and non-productive strategies in the form of sacrificing personal leisure.

### **QUALITY OF WORK LIFE IN INDIAN DUAL CAREER COUPLES**

Researches observes that in recent years Indian workforce from all sectors reflects a growing trend of dual incomes household and thus raises the concern for employee's better quality of work life. Due to this situation an imbalance has been created between work and life and majority of dual career couple are living a less satisfied life. With the increase in women participation at workforce, the contribution of both partners is required to maintain a chord between work and family. Consequently, quality of work involvement instead of work itself has becomes main concern of employees who desires for a friendly workplace. In Indian work arrangement work-life disparity is a not a major concern for the employees, as they have better control over their work and personal lives. Organizations can play a major role in these situations in encouraging work-life balance. They can provide work-life balancing policies like family care programmes, fair compensation, flexible work facility, and emotional counseling services. Rajadhayaksha & Smitha (2004) has specified that work family role conflicts and organizational role pressures were noticeably similar in Indian dual career couples. Work dissatisfaction is a serious matter confronted by Indian organizations today.

### **MEASURES AND COPING STRATEGIES FOR WORK LIFE BALANCE IN DUAL-CAREER COUPLES**

After going through several research studies on dual career couples work life balance problems some measures and coping strategies has been suggested in present study. In spite of mutual emotional and monetary compensations, the demands of two parallel careers can generate stress, which gets complex when couples have children or other caring responsibilities.

These couples face more stress in both the home and work atmosphere. The professional work set-up demands time and commitment which are suitable for work culture and not for household.

These studies hence put forward that dual-career couples have different requirements from conventional single-career couples. The organisations, thus need to develop strategies that offer provision for work-family management. The better understanding of employer is required for the realization of the contrary demands of parallel careers, to make employees more productive both at work and home. Higgins, Duxbury and Irving (1992) for instance, observed that work and family roles conflict decrease employees' expectation of quality of work and family life which, effects efficiency, absenteeism and turnover rate.

Cooperative work arrangements like flexible job opportunities (e.g. flextime, compressed work weeks, home teleworking) support with child and dependent care, employee provision programme (e.g. counseling) and career path alternatives (Bardoel, Tharenou and Moss, 1998) are found to be vital features to reduce stress, enhance employees' performance, endure career growth, and at the same time help balance career and family strains.

In 1996 a report published, the Work and Family Unit, based in the Indian Department of Employment, Workplace Relations and Small Business, concluded that senior management is in

growing pressure to plan and deliver their human resource strategies that can reduce the adverse effects of work family conflict on organisations in achieving their commercial objectives, But, planing and executing strategies that resolve work-family conflict has no value without a strategic business method (Russell and Bowman, 2000).

In other words, it is imperative for both personnel and companies to connect work-family issues with the planned corporate needs (Bardoel, Thanenau and Ristov, 2000). The consequences of growing work pressures, multitasking functions, job uncertainty, unfavorable work environment are observable in the form of mental and physical fatigue, high turnover rate, lesser productivity, reduced organisational commitment and higher absenteeism.

Hence, it has been recommended that application of family-friendly strategies is more imperative than only framing them up.

### **CONCLUSION**

It is noteworthy that growing number of Indian establishments have begun to resolve the issue of work-family problem by making provision for family-friendly policies to meet the varying needs of employees and employers (Russell and Bowman, 2000). These strategies are beneficial for both organisation and the employees and can lead to an advantageous situation for everyone concerned. The ever changing state of workplace and socio-cultural life has led to incongruity in the career and individual lives of employees. Increasing work and personal demands has made it complex for working people to manage their job and family lives. This increase level of stress and demand at the workplace has led to rise in attrition rate in business. It can be concluded that, organizations need to create a flexible work environment that would help workforce to deal with their work and family in more organized and efficient manner.

### **LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH**

As we engaged in reviewing the literature on dual-career couples, several themes came into view that could be worth exploring in future research. Our observations on Dual-Career Couples life, clearly limited in scope, drew attention to some of the problems faced by dual-career couples as they cope with the demands of work, family, and home. While most of the couples in researches show with reported career achievement, several of the coping approach they relied on (e.g., less sleep, do exercises, healthy meals, and personal time) have the potential for long-term harmful consequences to their health and personal well-being, as well as reduce their satisfaction with work and home. An all-inclusive study of dual-career couples, with questions that deal with the challenges recognized in the existing literature and in some of the descriptive examples provided here, could disclose the amount and scale of the problem globally. Thoroughly qualitative study, perhaps using an appreciative inquiry approach (Watkins & Mohr, 2001), could also add to our perceptive of challenges experienced by dual-career couples and how they are successfully managing their juggling work and life.

The accountability for reducing stress lies not only with organizations, but also with dual career couples and their family members (in the Indian context). Organizations in Indian contest need to recognize and emphasize on providing support to the couples for work-personal life balance. As Bruke (2002) has found that if employees perceive organizations' standards helpful in work-life balance, they experience superior job satisfaction, less stress and have less intention to quit, and more positive emotional well-being. In conclusion, it is apparent that a thoughtful, cooperative, and considerate approach towards managing dual career couples' pressure can improve

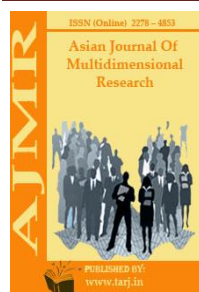


organizational efficiency by fostering sustained engagement and maximum performance in dual career couples.

## **REFERENCES**

1. Adams, G. A., King, L.A. & King, D.W. (1996). Relationships of job and family involvement, family social support, and work-family conflict with the job and life satisfaction. *Journal of Applied Psychology*, 81(4), 411-420.
2. Aryee, S; Srinivas, E S and Tan H (2005), "Rhythms of Life: Antecedents and Outcomes of Work-family Balance in Employed Parents," *Journal of Applied Psychology*, 90 (1), 132-146
3. Bhargava. S & Baral R (2009). "Work-Life Balance Practices in India", Working Paper, IIT Bombay.
4. Bachman, IG., O'Malle, P.M., & Johnston, J (1978). *Youth in transition*, 6, Ann Arbor, MI: Institute for Social Research.
5. Crouter AC. Spillover from family to work spillover: The neglected side of the work-family interface. *Hum Relat.* 1984; 37:425-42.
6. Dr. Ipseeta Satpathy, Dr.B. Chandra Mohan Patnaik, Mitu Agarwal. (March 2014) *Work life Balance @ Working Couples –A Review of Literature*. *Asian Journal of Research in Social Sciences & Humanities*. [Online]Vol.4 (No.3). Pp.190-196www.ajsh.org [7.12.2015] 11. Uttam Kumar Panda (December 2011) *Role Conflict, Stress and Dual Career Couples: An Empirical study*. *The Journal of Family Welfare* [Online] Vol.57 (No.2) pp.72-88www.medind.nic.in [20.11.15]
7. F. Hall and D. Hall, *The Two-Career Couples* (Reading, Massachusetts: Addison-Wesley Publishing Company, 1979).
8. Johari Abbas and Bradshaw C. Amy. (2002) *Dual academic careers: Issues & Personal Perspectives*. Springer. [Online]Vol.no.50. (No.3). pp.97104www.jstor.org/stable/30220338[15.12.2015]
9. Mohanty, A. and Jena, L. (2016) *Work-Life Balance Challenges for Indian Employees: Socio-Cultural Implications and Strategies*. *Journal of Human Resource and Sustainability Studies*, 4, 15-21.
10. M. Adya (2008) "Women at work: differences in IT career experiences and perceptions between south Asian and American women" *Human Resource Management*, 47 (3) (2008), pp. 601-635.
11. Rani V, Khandelwal P. Family environment and interpersonal behavior: A comparative study of dual career and single career families. *Indian J Soc Work*. 1992; 53:232-43.
12. R. Rapoport and R. N. Rapoport, "The Dual-Career Family," *Human Relations*, XXI I (No. 1, 1969), 3-30.
13. Sanghamitra Buddhapriya. (January-March 2009) *Work family challenges & their Impact on career decisions: A study of Indian women professionals*. *Vikalpa*. [Online] Vol.34 (No.1). pp.31-45.www.vikalpa.com [20.11.2015]
14. Voydanoff P. Work role characteristics, family structure, demands and work-family conflicts. *J Marriage Fam*. 1988; 50:749.





## MECHANISM FOR HANDLING OF CUSTOMERS GRIEVANCE ON E-BANKING SERVICES OF SELECTED COMMERCIAL BANKS IN ODISHA: A COMPARATIVE STUDY

Chittaranjan Khuntia\*; Dr. Kishore Kumar Das\*\*

\*Research Scholar,  
School of Commerce,  
Ravenshaw University,  
Cuttack, Odisha, INDIA  
Email id: chittakhuntia90@gmail.com

\*\*Associate Professor & Head,  
Department of business Administration  
School of Commerce & Management  
Ravenshaw University,  
Cuttack, Odisha, INDIA.

### ABSTRACT

*E-banking facilitates an effective payment and accounting system thereby enhancing the speed and delivery of banking services considerably. While e-banking has improved banks efficiency and convenience, it has also posed several new challenges. These challenges are particularly more apparent in areas of regulation and supervision of banks. Indian Banking and Financial Sector have also several critical stages of transformations over the last decade. The operating environment of banks has changed significantly in terms of liberalization of regulations, increasing competition for both domestic and foreign players. This study pertains to analysis of electronic banking in general and electronic banking in India in particular. Electronic banking as it has demonstrated the velocity of its growth is incredibly fast and efficient. It has allowed individuals including companies to perform their banking businesses from their homes or offices in a very cost-effective way. The present study is based on the following objectives ‘*

- 1 To study respondents opinion about e-banking.*
- 2 To examine the mechanism for handling grievance of e-banking on customer.*

*The study is based on only primary data. Five point Likert scale has been used to know the comparative study of e-banking services of commercial banks. Sample size has been taken from 350 Customers. Only 31 respondents are rejected and 319 respondents found to be valid for all*

*purpose. The analysis has been undertaken with the help of various statistical tools and techniques and necessary inferences have been drawn from the same. Besides, simple average and percentages, simple statistical test like Chi-square test has been applied to bring out the association of variables. The study will be helpful for suggesting the effective planning and implementation of different E-Banking services by the public and private sector banks in Odisha particular and across the country in general. The research will be helpful in achieving the objective of digital economy and also facilitate further research in this field of study.*

**KEYWORDS:** *E-banking, Mechanism, Financial Services, Implementations*

## 1. INTRODUCTION

Banking in India (Asian nation) originated within the last decades of the eighteenth Century. The primary banks were the General Bank of India that started in 1786, and also the Bank of Hindustan which started in 1770, each of which are currently defunct. Banks settle for deposits from the general public moreover as from the businessman. Anyone who saves money for future can deposit his savings in a bank. Businessmen have the financial gain from sales out of which they need to create payment for expenses. They'll keep their earnings from sales safely deposited in banks to fulfil their expenses from time to time. 'Banking in traditional sense is that the business of accepting deposits of cash from public for the aim of disposal and investment. As per Section 5(c) of Banking Regulation Act, 1949 a "Banking Company" means any company which transacts the business of banking in India.' Any company which is engaged in the manufacture of goods or carries on any trade and which accepts the deposits of money from the public merely for the purpose of financing its business as such manufacturer or trader shall not be deemed to transact the business of banking within the meaning of this clause."

A banking industry could be a cluster or network of Institutions that give financial or monetary services for us. These institutions are accountable for operational a payment system, providing loans, taking deposits, and helping with investments. *Banks* can create new money when they make a loan. New loans throughout the banking industry generate new deposits elsewhere within the system. The money offer is usually accrued by the act of lending, and reduced once loans are repaid quicker than new ones are generated.

Changes in Technology and lifestyles have modified the structure of banking. Now-a-days, banks are seeking alternative way to supply their various services. The banking system, being very competitive, not solely focuses on providing wide product lines to produce competitive advantages, however additionally emphasizes the importance of its services significantly in maintaining service quality. Information Technology has enabled banks to perform additional effectively. The banking sector is an example during which information-technology infrastructures have had implications on the macro-economic development of the many nations within the developing world. It's necessary to notice that the banking system was one amongst the terribly initial to utilize info technology back in the 1960s, and has therefore a record of influencing the event method through the technology. There are several examples of information technology applications within the banking sector that have helped build new markets and fuel the economy. As an example ATM, Internet banking and mobile banking etc.

Various developments have taken place in Indian Banking. Among the assorted developments, technology has influenced the method customer interacts with banks. Electronic channels and

product like ATM, cards, web banking, phone banking EFT, ECR and mobile banking offered along with traditional branch channel. Variations within the usage of channels exist between developed countries and developing countries. Evidence suggests that there's a shift from traditional channel to electronic channels. As an example, usage of digital banking in developed countries is more than 90 percent's and diffusion of digital channels in developing countries varies from 11 percent's to 25 percent's. The study by Capgemini in his report "World Payments Report 2014" indicate that non-cash transactions have reached 334 billion transactions. There is greater propensity of customers to move towards digital channels. Banks which develop digital capabilities are going to benefit. Customers recognize greater convenience through digital channels. However, banks will need to cope up with issues of customer service and frauds which are associated with digital channels.

## **2. E-BANKING SERVICES IN INDIA**

E-banking facilitates an efficient payment and accounting thereby enhancing the speed and delivery of banking services significantly. Whereas e-banking has improved banks potency and convenience, it's additionally display many new challenges. These challenges are significantly additional apparent in areas of regulation and supervision of banks. After 1980s the rest of the world followed similar changes that affected the American and British banking system and India has been one amongst these countries. Indian Banking and financial Sector have additionally many essential stages of transformations over the last decade. The operational atmosphere of banks has modified considerably in terms of liberalization of regulations, increasing competition for each domestic and foreign players. This study pertains to analyze electronic banking generally and electronic banking in India particular. Electronic banking as it has demonstrated the velocity of its growth is incredibly fast and efficient. It has allowed individuals including companies to perform their banking businesses from their homes or offices in a very cost-effective way. Studies have shown that with this new technology, it's become potential for each the banks and customers to possess an on the spot insight regarding the standing and operation of their accounts. These are banks wherever majority stake is control by the GOI or RBI. These banks come under public sector banks. Public Nationalized banks comprise nineteen (19) banks and SBI and its seven (7) associate banks. Just in case of private banks majority of share capital of the bank is control by private people. These banks are registered as companies with liability. With the advancement of science and technology, the modern market has gone a buyer's market, it additionally known as customer orientated market. Banking institutions are one amongst the foremost necessary service industries that have special importance within the economy. Advancement in the technology and concomitant developments in communication channels has resulted in innovation of other delivery channels. These have modified the method in to interface the customer. In the traditional banking customer has got to visit the branches to carryout banking transactions, however currently they need the selection of electronic delivery channels i.e. ATM, Credit cards, Debit cards, Internet banking, mobile banking, core banking , phone banking ECS, EFT etc.

## **3. STATEMENT OF THE PROBLEMS**

There are several major challenges and problems facing the e-banking industry these days. The point of investigation that is explored during this research is electronic banking in general and electronic banking in India especially. Electronic banking because it has demonstrated the rate of its growth is incredibly fast and economical. First, and may be most significant is that the security concern. Customers are definitely involved of giving their bank account range online or

paying associate degree invoice through Internet. Presently there are two totally different approaches within the e-banking industry: a separate (from its traditional office) internet e-bank (i.e., virtual bank) with all transactions being done online, or to feature a web banking section to the services already being offered by its major bank workplace. Each approach have blessings and problems to be addressed in apply This study focused on the opportunities and challenges that the introduction of electronic banking has brought in India. On a deeper level the research aims to acquire higher understanding of the factors influencing the development of electronic banking. The research issues during this research can be formulated as:

- What are the most opportunities for banks to adopt and implement electronic banking? The opportunities are examined in the light of the reduction of prices and marginal profit.
- What are the most challenges that may delay development of electronic banking in India?

#### **4. SIGNIFICANCE OF THE STUDY**

It is obvious that below the various financial and human resources conditions, the stages of e-banking application and development square measure varied for various banks across the land. To summarise, the shortage of finance resource and weakness in technical experience are cited presently as 2 major obstacles in developing and maintaining e-banking services for several native smaller banks situated in small cities and rural areas. Presently all banks in India are within the method of building foremost data Technology infrastructure. Once banks invest heavily on technology, they have to make sure that the facilities they supply match with the requirements of the customer. Without understanding the preferences of the customer, activity customer satisfaction encompasses a nice potential to supply the managers of retail banks with data concerning their actual performance of the bank and also the expectations of their customers (Al-Eisa and Alhemoud, 2009). For a service provider customer satisfaction is vital issue. There might not be associate degree final goal in itself rather; it's a method for yielding bigger profits; even satisfied customer is additionally as another variety of profit. Therefore, assessment of customer satisfaction and factors influencing satisfaction should be examined within the banking sector. With is seeing able this research makes an attempt measure the overall customer satisfaction with electronic banking services in Odisha. So, this study can give several implications to bankers in understanding the customer preferences and facilitate the banks to realize higher customer satisfaction. Therefore, endeavour, particularly a comparative study on the event of e-banking services is seemingly in want. Further, there are several studies published in several foreign countries on e-banking and internet banking supported customers' perspective, however the quantity of studies on this space in Odisha context is merger. Therefore, this study is significance to bridge this gap.

#### **5. OBJECTIVES OF THE STUDY**

The present research study has the following two key Objectives

1. To study respondents opinion about e-banking.
2. To examine the mechanism for handling grievance of e-banking on customers.

#### **6. HYPOTHESIS**

1. The customer opinion towards e-banking is independent of their demographic factors –Age, sex, income, education, occupation or place of residence.
2. E- Grievances mechanisms are mostly similar in both the type banks

## 7. RESEARCH DESIGN

The data collected for this study are each primary as well as secondary data. The primary data are collected from a sample survey. A sample of 350 respondents is collected from research area through Questionnaires. The secondary data are collected from internal sources. It'll be collected on the basis of bank's books of accounts, structure file, official records, preserved data within the bank's information and their official web site. Via-various journals, magazine, newspapers and through various search engines,. The annual reports of various banks, banking company of India, Reserve bank of India, Ministry of Finance and alternative trusted publications are studied.

Various applied statistical tools like measures of central tendency,, quantitative relation co-relation, variance ,T-test, Anova etc, are used as per the necessity. Cluster and convenience sampling technique is used to collect the data. The Periodical scope of this analysis is for last 20 years and for Odisha. It'll be for last one year. In research study I will consider about a pair of public sector banks **State bank of India, Uco Bank**, and a pair of private sector banks **ICICI Bank, HDFC bank, in Odisha**. The tools for the study are e-transactions through saving product, Investment merchandise.

## 8. REVIEW OF LITERATURE UPTO 2000

**1. Chaudhary H.C. (1988)<sup>1</sup>** in his article entitled "Marketing Information System in Banks" given the importance of marketing in banking services, completely different marketing decision areas in banks and information wants for creating marketing decision in banks, The author, on the premise of survey of nationalized commercial banks in India, recommended utility of a scientific marketing information system to commercial banks and varied factors which may create the informational base of the bank strong and authentic.

**2. Sathye (1997)** surveyed the standing of Internet banking in Australia. The study found that only 2 of the 52 banks started net banking services at that point. but still there was heaps of room for net banking to expand in Australia.

**3. Booz Allen Hamilton (1997)<sup>3</sup>** conducted a global survey covering 386 retail and corporate banking institutions in 42 countries to assess the strategic impact of Internet banking on the financial service industry. In keeping with the study, there's a large perception gap between North American/European banks and Japanese banks concerning the longer term of net banking. North America and European banks expect net banking to become the foremost vital retail channel among ten years; however Japanese banks expect traditional branches to stay the foremost vital channel. The study additionally indicates the rapid climb potential of net banking. Several of the banks that responded have plans to upgrade the practicality of their net service offerings.

**4. Furst et. al. (1998)<sup>4</sup>** a U.S. based study found out a significant shift by consumers and businesses to electronic payments. In response to developments in electronic payments and remote banking, banks have greatly increased their investment in technology, significantly in retail banking. The gains from technological advancements in banking and payments square measure seemingly to be substantial, each from the purpose of view of individual financial institution and economy-wide. During this surroundings, banks ought to review and, if necessary, modify their risk management practices in tandem with upgrading their technology activities.



**REVIEW OF LITERATURE 2000-2010**

**5. Suganthi et. al. (2001)**<sup>7</sup> conducted the review of Malaysian banking sites and revealed that all domestic banks were having a web presence. Only 4 of the 10 major banks were with transactional sites. The remaining sites were at informational level. There are various psychological and behavioural problems as trust, security of net transactions, reluctance to vary and preference for human interface that seem to impede the expansion of net banking.

**6.V.K.Chopra (2001)**<sup>8</sup> in his research article entitled “Emerging challenges, strategies and solutions in Indian public sector banks” highlighted Post VRS situation, shrinking of profitability, new product like tele-banking, mobile banking, net banking, e-commerce connected product & non-performing assets. He identified the activity of Mergers & Acquisitions and a few of the challenges before the Indian Public Sector Banks.

**7. Jun and cai (2001)**<sup>9</sup> identified one of the very important service quality dimensions of banking service quality is reliability. . the web banking surroundings has full-grown staggeringly over the past many years and can still grow as financial institutions still attempt to permit customers to finish money transfers, pay bills, and access important information on-line. During this same time, online banking has been laid low with Internet criminals and fraudsters making an attempt to steal client information. Phishing, pharming, and alternative forms of attacks became accepted and are wide used as a method for fraudsters to get info from customers and access online banking accounts.

**REVIEW OF LITERATURE 2011 AND ONWARDS**

**8. Dr.N.B.Jadhav, Mrs.Poonam R. Lohana and Mr. Rupesh Dargad (2011)**<sup>39</sup> in their research article on “Customer perception and attitude towards e-banking” determined the consumers perspective on the adoption of E-banking. The study revealed that electronic revolution has made it possible to provide ease and flexibility in banking operations which benefit the customers.

**9. K.T. Geetha &V.Malarvizhi (2011)**<sup>40</sup> in their research paper on “Acceptance of E-Banking Among Customers” investigated the factors that are touching the acceptance of e-banking services among the customers and additionally indicate the extent of concern relating to security and privacy issues in Indian context. The finding delineated several factors like security and privacy and awareness level augmented the acceptance of e-banking services among Indian customers. The finding additionally showed that if banks give them necessary guidance and ensure safety of their accounts, customers are willing to adopt e-banking.

**10. M. Mohammed Siddik and Dr. M. Selva Chandra (2011)**<sup>41</sup> in their study on “Customer Satisfaction Towards E-Banking Services of ICICI Bank in Chennai” explored the consumer satisfaction at multidimensional level by assessing the service delivery. The study disclosed that majority of the respondents most preferred their branch as a result of Quality of service. Convenience, proximity and recognition of branch were main reasons to prefer the particular branch by the customer.

**11.** A study was undertaken by **R. Karruppusamy and Dr. N. VenkatesaPalanichamy (2011)**<sup>42</sup> to understand the customer preference towards e-banking services with a view to improve the operational efficiency of the e-banking facilities. The results of the study disclosed that majority of the E- banking users are males, belonging to young people with high educational status and better Income source compared to non E-banking users. Most of the non E-banking



users were conscious of E-banking and showed disposition to use E-banking facilities. The most purpose of using E-banking facilities is for obtaining credit and debit alert; time saving was the foremost vital issue that influenced the adoption of E-banking facilities. Educational status, age, frequency of the visit to bank were the key factors that discriminating the user and non- user of E-banking. The customer had a positive perception regarding quickness, energy and time saving, advantages, security and dependability of E-banking facilities but Lack of adequate knowledge on E-banking facilities and technological complexity were major constraint faced by the customer while using e- banking services.

## 9. ANALYSIS AND INTERPRETATION OF RESULTS

The study was conducted within the state of Odisha by taking 350 respondents into consideration and data were collected according to the opinion of the respondents. Out of the 350, only 31 cases were found to be invalid from non-response to some questions. So 319 were found valid for all purpose to measure. The demographic overview of the respondents has been depicted below.

For the present analysis and interpretations cross tabulation of age, gender type, education qualification, types of Domicile, income, factors have been included in the demographic study to consider the pattern of links and relation to each variable with Bank marketing and profitability to the effective Management. Further, response wise analysis from the respondents have been analysed and interpreted through Factorial-test, chi-square test and Regression to find out the rate of change in the Bank marketing by effectiveness in management.

### 9.1 ANALYSIS OF CROSS MATRIX RESULTS (DEMOGRAPHIC)

#### ANALYSIS OF DOMICILE WITH GENDER DIFFERENCES

**TABLE- 9.1CROSS TABULATION OF DOMICILE WITH GENDER DIFFERENCES IN BANKS**

| Type of bank   |          |            | Gender |        |        |
|----------------|----------|------------|--------|--------|--------|
|                |          |            | Male   | Female | TOTAL  |
| Public sector  | domicile | URBAN      | 40     | 31     | 71     |
|                |          |            | 56.3%  | 43.7%  | 100.0% |
|                |          | SEMI URBAN | 79     | 26     | 105    |
|                |          |            | 75.2%  | 24.8%  | 100.0% |
|                |          | Total      | 119    | 57     | 176    |
|                |          |            | 67.6%  | 32.4%  | 100.0% |
| Private sector | Domicile | URBAN      | 36     | 62     | 98     |
|                |          |            | 36.7%  | 63.3%  | 100.0% |
|                |          | SEMI URBAN | 38     | 7      | 45     |
|                |          |            | 84.4%  | 15.6%  | 100.0% |
|                |          | Total      | 74     | 69     | 143    |
|                |          |            | 51.7%  | 48.3%  | 100.0% |

Sources: compiled from collected data

**Table 9.1** indicates the bank in response to their ownership, i.e. public sector banks and private sector banks. Further domicile factor has been considered here in relation to their gender type. As we know, gender variation reveals in perception level on a particle aspect when it comes to satisfaction. So here two factors have been correlated with matrix and the results there of as: most of the customers are from semi-urban areas in public sector banks, i.e., 105, whereas in private sector banks, maximum customers are from urban areas. So, it is concluded that, urban customers are mostly fascinated by private banks and mostly prefer to open their accounts, counterfeiting to public sector banks.

**TABLE-9.2 SHOWING CROSS RELATION OF AGE AND GENDER TYPE IN THE BANKS**

| Type of bank  |                | AGE          | GENDER       |        |        |        |
|---------------|----------------|--------------|--------------|--------|--------|--------|
|               |                |              | Male         | Female | Total  |        |
| Public sector | BELOW 20       | Count        | 7            | 4      | 11     |        |
|               |                | % within age | 63.6%        | 36.4%  | 100.0% |        |
|               | 20-30          | Count        | 59           | 37     | 96     |        |
|               |                | % within age | 61.5%        | 38.5%  | 100.0% |        |
|               | 30-40          | Count        | 25           | 9      | 34     |        |
|               |                | % within age | 73.5%        | 26.5%  | 100.0% |        |
|               | 40-50          | Count        | 14           | 7      | 21     |        |
|               |                | % within age | 66.7%        | 33.3%  | 100.0% |        |
|               | Above 50       | Count        | 14           | 0      | 14     |        |
|               |                | % within age | 100.0%       | .0%    | 100.0% |        |
|               | Total          | Count        | 119          | 57     | 176    |        |
|               |                | % within age | 67.6%        | 32.4%  | 100.0% |        |
|               | Private sector | Below 20     | Count        | 9      | 16     | 25     |
|               |                |              | % within age | 36.0%  | 64.0%  | 100.0% |
| 20-30         |                | Count        | 17           | 14     | 31     |        |
|               |                | % within age | 54.8%        | 45.2%  | 100.0% |        |
| 30-40         |                | Count        | 19           | 13     | 32     |        |
|               |                | % within age | 59.4%        | 40.6%  | 100.0% |        |
| 40-50         |                | Count        | 14           | 14     | 28     |        |
|               |                | % within age | 50.0%        | 50.0%  | 100.0% |        |
| Above 50      |                | Count        | 15           | 12     | 27     |        |
|               |                | % within age | 55.6%        | 44.4%  | 100.0% |        |
| Total         |                | Count        | 74           | 69     | 143    |        |
|               |                | % within age | 51.7%        | 48.3%  | 100.0% |        |

Sources: compiled from collected data

**Table 9.2** shows the age wise relation to each category with gender type in both the banks as, in below 20 years, a total of 11 customers 7 are male and 4 are female under the public sector

banks. Further, in 20-30 years, out of total of 96 customers, 59 are male and 37 are female, which are found in public sector banks. In the age of 30-40 years, a total of 34 customers are found where 25 are male and 9 are females in public sector banks. Similarly, in 40-50 years, total of 21 customers are found and out of these, 14 are male and 7 are females. Further, in above 50 years group, a total of 14 customers are found and all are found to be male and no female were found.

Similarly, maximum customers were found in the age group of 30-40 years followed by 20-30 years of age. Out of 143 customers moreover, the numbers of customers were found same with a little variation in the groups. Male represented 74, where females were found to be 69 customers.

**TABLE-9.3 CROSS MATRIX OF AGE, EDUCATIONAL QUALIFICATION (BANKS)**

| Type of bank  |                |              | Educational qualification |         |       |       |       | Any Other | Total  |
|---------------|----------------|--------------|---------------------------|---------|-------|-------|-------|-----------|--------|
|               |                |              | HSC below                 | or 12th | UG    | PG    |       |           |        |
| Public Sector | BELOW 20       | Count        | 0                         | 7       | 4     | 0     | 0     | 11        |        |
|               |                | % within age | .0%                       | 63.6%   | 36.4% | .0%   | .0%   | 100.0%    |        |
|               | 20-30          | Count        | 0                         | 2       | 39    | 44    | 11    | 96        |        |
|               |                | % within age | .0%                       | 2.1%    | 40.6% | 45.8% | 11.5% | 100.0%    |        |
|               | 30-40          | Count        | 0                         | 2       | 16    | 8     | 8     | 34        |        |
|               |                | % within age | .0%                       | 5.9%    | 47.1% | 23.5% | 23.5% | 100.0%    |        |
|               | 40-50          | Count        | 7                         | 0       | 10    | 4     | 0     | 21        |        |
|               |                | % within age | 33.3%                     | .0%     | 47.6% | 19.0% | .0%   | 100.0%    |        |
|               | ABOVE 50       | Count        | 0                         | 9       | 5     | 0     | 0     | 14        |        |
|               |                | % within age | .0%                       | 64.3%   | 35.7% | .0%   | .0%   | 100.0%    |        |
|               | Total          | Count        | 7                         | 20      | 74    | 56    | 19    | 176       |        |
|               |                | % within age | 4.0%                      | 11.4%   | 42.0% | 31.8% | 10.8% | 100.0%    |        |
|               | Private sector | BELOW 20     | Count                     | 15      | 2     | 0     | 0     | 8         | 25     |
|               |                |              | % within age              | 60.0%   | 8.0%  | .0%   | .0%   | 32.0%     | 100.0% |
| 20-30         |                | Count        | 3                         | 4       | 2     | 11    | 11    | 31        |        |
|               |                | % within age | 9.7%                      | 12.9%   | 6.5%  | 35.5% | 35.5% | 100.0%    |        |
| 30-40         |                | Count        | 0                         | 2       | 13    | 10    | 7     | 32        |        |
|               |                | % within age | .0%                       | 6.3%    | 40.6% | 31.3% | 21.9% | 100.0%    |        |
| 40-50         |                | Count        | 2                         | 12      | 3     | 9     | 2     | 28        |        |
|               |                | % within age | 7.1%                      | 42.9%   | 10.7% | 32.1% | 7.1%  | 100.0%    |        |
| ABOVE 50      |                | Count        | 5                         | 14      | 6     | 1     | 1     | 27        |        |
|               |                | % within age | 18.5%                     | 51.9%   | 22.2% | 3.7%  | 3.7%  | 100.0%    |        |
| Total         |                | Count        | 25                        | 34      | 24    | 31    | 29    | 143       |        |
|               |                | % within age | 17.5%                     | 23.8%   | 16.8% | 21.7% | 20.3% | 100.0%    |        |

Sources: compiled from collected data

**Table-9.3** indicated the no. of customers in different age groups differentiating with their Educational qualification type. Here five categories of educational qualification have been presented as : HSC or below ,12<sup>th</sup> pass, UG, PG, and Any Other which includes technical education, vocational, and other degrees of interest). Age wise categorizations have been presented with classification in age groups.

Here out of 176 customers in public banks, 4.0% customers were found to be below HSC and maximum customers were Under Graduate(42.0%) followed by Post graduation(31.8%). But in private banks, maximum customers are found to be 12<sup>th</sup>n pass (23.8%) followed by Under graduate (21.7%).

#### 9.4 AGE AND EMPLOYMENT STATUS

**Table-9.4** indicated the number of employees in different age groups differentiating with their Educational qualification type as: Student, Self-employed/business Service, Professional and Any other. Here out of customers, maximum customers are service holder followed by self-employed business groups. But, in private sector banks most of customers are professional followed by any other occupation and service group

**TABLE-1.8.4 CROSS TABULATION OF AGE AND EMPLOYMENT STATUS**

| Type of bank  |                       |              | Employment status |                            |         |              |           | Total  |        |
|---------------|-----------------------|--------------|-------------------|----------------------------|---------|--------------|-----------|--------|--------|
|               |                       |              | Student           | Self-employed/<br>Business | Service | Professional | Any other |        |        |
| Public sector | BELOW 20              | Count        | 9                 | 0                          | 0       | 2            | 0         | 11     |        |
|               |                       | % within age | 81.2%             | .0%                        | 0.0%    | 18.2%        | .0%       | 100.0% |        |
|               | 20-30                 | Count        | 0                 | 7                          | 89      | 0            | 0         | 96     |        |
|               |                       | % within age | 44.8%             | 6.3%                       | 93.7%   | 0.0%         | 0.0%      | 100.0% |        |
|               | 30-40                 | Count        | 0                 | 9                          | 23      | 2            | 0         | 34     |        |
|               |                       | % within age | .0%               | 26.5%                      | 67.6%   | 5.9%         | .0%       | 100.0% |        |
|               | 40-50                 | Count        | 0                 | 2                          | 9       | 5            | 5         | 21     |        |
|               |                       | % within age | .0%               | 9.5%                       | 42.9%   | 23.8%        | 23.8%     | 100.0% |        |
|               | ABOVE 50              | Count        | 0                 | 0                          | 9       | 0            | 5         | 14     |        |
|               |                       | % within age | .0%               | .0%                        | 64.3%   | .0%          | 35.7%     | 100.0% |        |
|               | Total                 | Count        | 9                 | 18                         | 130     | 9            | 10        | 176    |        |
|               |                       | % within age | 5.1%              | 10.3%                      | 73.9%   | 5.1%         | 5.6%      | 100.0% |        |
|               | Private sector<br>Age | BELOW 20     | Count             | 0                          | 0       | 2            | 12        | 11     | 25     |
|               |                       |              | % within age      | .0%                        | .0%     | 8.0%         | 48.0%     | 44.0%  | 100.0% |
| 20-30         |                       | Count        | 6                 | 4                          | 5       | 10           | 6         | 31     |        |
|               |                       | % within age | 19.4%             | 12.9%                      | 16.1%   | 32.3%        | 19.4%     | 100.0% |        |
| 30-40         |                       | Count        | 0                 | 7                          | 11      | 14           | 0         | 32     |        |
|               |                       | % within age | .0%               | 21.9%                      | 34.4%   | 43.8%        | .0%       | 100.0% |        |
| 40-50         |                       | Count        | 0                 | 2                          | 7       | 14           | 5         | 28     |        |
|               |                       | % within age | .0%               | 7.1%                       | 25.0%   | 50.0%        | 17.9%     | 100.0% |        |

|             |              |              |      |       |       |       |       |        |
|-------------|--------------|--------------|------|-------|-------|-------|-------|--------|
|             |              | % within age | .0%  | 7.1%  | 25.0% | 50.0% | 17.9% | 100.0% |
| ABOVE<br>50 | Count        |              | 0    | 6     | 3     | 10    | 8     | 27     |
|             | % within age |              | .0%  | 22.2% | 11.1% | 37.0% | 29.6% | 100.0% |
| Total       | Count        |              | 6    | 19    | 28    | 60    | 30    | 143    |
|             | % within age |              | 4.2% | 13.3% | 19.6% | 42.0% | 21.0% | 100.0% |

Sources: compiled from collected data

Table-9.4 indicated the numbers of employees in different age groups differentiating with their Educational qualification type as: Student, Self-employed/business Service, Professional and Any other. Here out of customers, maximum customers are service holder followed by self-employed business groups. But, in private sector banks most of customers are professional followed by any other occupation and service groups.

## 10. FACTOR ANALYSIS

In this part, factor analyses have been measured for different parameter relating to banking in both the sector banks. Thus, total customers have been included in this part for analysis to know the exact cause for the retail banking system.

### 10.1 ADOPTION OF E-BANKING TECHNOLOGY:

| Table-10.1 Reliability Statistics on Adoption of E-Banking Technology |            |
|---|------------|
| Cronbach's Alpha  | N of Items |
| .625  | 7          |

Sources: compiled from collected data

**Table-10.1** shows the reliability test (Cronbach's Alpha) of “**Adoption of E-Banking Technology**” where the result of 7 factor variables reveals 0.625 and the reliability of responses can be positively considered as accepted for further analysis.

| Table-10.2 Communalities on Adoption of E-Banking Technology |  |  |         |            |
|--|--|--|---------|------------|
|  |  |  | Initial | Extraction |
| A1   | When you have a problem, the bank shows a sincere interesting in solving it                              |  | 1.000   | .499       |
| A2   | Your bank has mostly suitable ATM location & e-corners   |  | 1.000   | .764       |
| A3   | Your bank has safe and secure ATM transaction  |  | 1.000   | .651       |
| A4   | Traditional banking still remain the best option for me  |  | 1.000   | .852       |
| A5   | Your bank has a limited choice in e-transactions   |  | 1.000   | .651       |
| A6   | Most of the customers don't know how to use and aware of some E-banking services provided by their banks |  | 1.000   | .764       |
| A7   | Many banks fear because there are no proper laws and regulation regarding E-banking                      |  | 1.000   | .670       |

Extraction Method: Principal Component Analysis.

Sources: compiled from collected data

**Table-10.2** highlights that the highest communalities value in the factor of “**Adoption of E-Banking Technology**” questions asked to different respondents of Odisha, which are recorded

maximum positive value against 'A7: Many banks fear because there are no proper laws and regulation regarding E- banking. (0.670) A5: Your bank has a limited choice in e-transactions.

**TABLE-10.3 TOTAL VARIANCE EXPLAINED ON ADOPTION OF E-BANKING TECHNOLOGY**

| Component | Initial Eigen values |               |              | Extraction Sums of Squared Loadings |               |              |
|-----------|----------------------|---------------|--------------|-------------------------------------|---------------|--------------|
|           | Total                | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % |
| 1         | 2.216                | 31.661        | 31.661       | 2.216                               | 31.661        | 31.661       |
| 2         | 1.335                | 19.078        | 50.740       | 1.335                               | 19.078        | 50.740       |
| 3         | .954                 | 13.625        | 64.365       |                                     |               |              |
| 4         | .858                 | 12.259        | 76.623       |                                     |               |              |
| 5         | .761                 | 10.869        | 87.492       |                                     |               |              |
| 6         | .501                 | 7.161         | 94.653       |                                     |               |              |
| 7         | .374                 | 5.347         | 100.000      |                                     |               |              |

Extraction Method: Principal Component Analysis.

Sources: compiled from collected data

Table – 10.3 indicates total variance analysis for faculty in Institution with initial Eigen values which shows the variance explained by the initial solution and sum of squared loadings. In the initial Eigen values for factors, those were above one can be taken to further study, out of the total 7 factors. Seven factors have been extracted here as the sum of square values is more than one. Only 51 percent of data seems to be valid in total cumulative variances and rest 49 percent indicate a loss of data in the factor analysis and can be analyzed in the following tables.

#### 10.4 TYPES OF TRANSACTION & CHARGES

| Table- 10.4 Reliability Statistics on Types of Transaction & Charges |            |
|--|------------|
| Cronbach's Alpha   | N of Items |
| .645   | 10         |

Sources: compiled from collected data

Table- 10.4 shows the reliability test (Cronbach's Alpha) of “Types of Transaction & Charges” of commercial banks where the result of 10 factor variables reveals 0.645 and the reliability of responses can be positively considered as accepted for further analysis.

#### 11. HYPOTHESES-I ( $H_0-1$ ):

**The customer opinion towards e-banking is independent of their demographic factors – Age, sex, income, education, occupation or place of residence.**

**TABLE-11.1 ANOVA ANALYSIS**

|    |                | Sum of Squares | df  | Mean Square | F     | Sig. |
|----|----------------|----------------|-----|-------------|-------|------|
| A6 | Between Groups | 6.585          | 1   | 6.585       | 3.751 | .034 |
|    | Within Groups  | 556.456        | 317 | 1.755       |       |      |
|    | Total          | 563.041        | 318 |             |       |      |



Sources: Compiled from collected data

**Table-11.1** reported the ANOVA results on A6 (Most of the customers don't know how to use and aware of some E-banking services provided by their banks) across the customers of the different banks of Odisha.

Here, in A6 : Most of the customers don't know how to use and aware of some E-banking services provided by their banks as it is revealed from the significance value indicate 0.034 ( $P \leq 0.05$ ) means they are strongly different with their opinion irrespective of age, sex, income and occupation of both the type of banks. Thus the null hypothesis ( $H_0$ ) is accepted.

## 11.2 HYPOTHESES-II ( $H_0-2$ ):

### E- Grievances mechanisms are mostly similar in both the type banks

**TABLE-11.2 ANOVA ANALYSIS**

|    |                | Sum of Squares | Df  | Mean Square | F     | Sig. |
|----|----------------|----------------|-----|-------------|-------|------|
| D7 | Between Groups | 4.028          | 1   | 4.028       | 3.620 | .048 |
|    | Within Groups  | 352.806        | 317 | 1.113       |       |      |
|    | Total          | 356.834        | 318 |             |       |      |

Sources: Compiled from collected data

Table-reported the ANOVA results on D7: **e-complaints on any transaction**, it is revealed that, the significance value indicate 0.0.048 ( $P \leq 0.05$ ) means they are strongly different with their opinion irrespective of age, sex, income and occupation of both the type of banks. The null hypothesis ( $H_0- 2$ ) is here by rejected as these two banks are strongly different from each other on e- grievances mechanism.

This chapter summarizes the findings emerged from analysis of the results pertaining to various aspects of e-banking / Internet banking, few suggestions have been recommended for the efficient functioning and effective management of the e-banking and internet banking.

The study was conducted within the state of Odisha by taking 350 respondents into consideration and data were collected according to the opinion of the respondents. Out of the 350, only 31 cases were found to be invalid from non-response to some questions. So 319 were found valid for all purpose to measure. The demographic overview of the respondents has been depicted below.

For the present analysis and interpretations cross tabulation of age, gender type, education qualification, types of Domicile, income, factors have been included in the demographic study to consider the pattern of links and relation to each variable with Bank marketing and profitability to the effective Management. Further, response wise analysis from the respondents have been analyzed and interpreted through Factorial-test, chi-square test and Regression to find out the rate of change in the Bank marketing by effectiveness in management.

The profiles of the respondents under demographic study are taken as **Gender, Age Group, Domicile Profile, Monthly Average Income, Educational Qualification and Occupation of the respondents.**

Internet banking is ever-changing the banking industry, having the key effects on banking relationships. Banking is currently no longer confined to the branches were one needs to approach the branch in person, to withdraw cash or deposit a cheque or request a statement of

accounts. In true internet banking, any inquiry or transaction is processed online without any reference to the branch at any time. Providing internet banking is progressively turning into a "need to have" than a "nice to have" service. Internet banking, thus, now is more of a norm rather than an exception in several developed countries due to the actual fact that it is the cheapest way of providing banking services.

## **12. MAJOR FINDINGS OF THE STUDY**

The major findings of the study obtained from the proper analysis and interpretation have been summarized below.

1. Two factors out of seven have been identified as significant in the analysis of Adoption of E-Banking Technology. The two significant factors are "A6: Most of the customers don't know how to use and aware of some E-banking services provided by their banks (0.736) and A5: Your bank has a limited choice in e-transactions (0.722).
2. Five factors out of fifteen have been marked significant in the analysis of 'Types of Product/Services offered by Bank'. The five significant factors are "B4: Debit card (0.734), B5: Electronic utility bill payment (0.648), B7: Mobile banking (0.776), B8: Internet banking (0.618) and B14: Every time message system/alerts made by bank (0.693)

## **13. CONCLUSION**

Based on this study, the opinion of the sample respondents among the bank customers the various aspects of e-banking / internet banking services provided by public and private sector banks are evaluated using appropriate statistical techniques such as Cross tabulation analysis with Kruskal-Wallis test, t-test in addition to descriptive statistics like mean and standard deviation.

It is concluded from the results of the study that the usage of ATM, Telebanking and Internet banking are perceived as important and the use of these services is associated with socio-economic and demographic characteristics of the respondents. Though, most of the customers prefer manual banking over e-banking, the customers tend to use e-banking / internet banking and adoption of e-banking and internet banking services among the bank customers is significantly influenced by the number of times visiting the banks as well as the number of banking transactions per month.

Most of the services through e-banking / internet banking performed by both public and private banks are beyond the expectation of the customers. Similarly the various services provided by both public and private sector banks are more than adequate for customers. It is concluded finally that there is significant difference between public and private sector banks in respect of both services provided and services performed via e-banking / internet banking.

## **14. SCOPE FOR FURTHER RESEARCH**

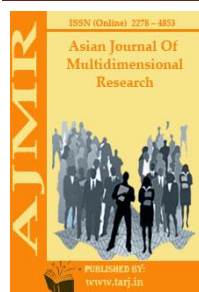
The present study has made an attempt to judge the impact of e-banking on operational performance of public and private sector banks, to assess the comparative service quality of e-banking in public and private sector banks, to analyze the impact of e-banking on payment and clearing system. There still remains a viable prospect for future research.

The following areas need further research in this field for the effective implementation of various e-banking/internet banking services in future for the benefit of all the people.

1. The study is attributed to the short period internet banking. The study can be undertaken for a longer period of time as well as larger sample size.
2. A Study on Importance of e-Banking /internet banking in financial inclusion.

#### REFERENCE

1. Choudary H.C. "Marketing Information Systems in Banks", *Indian Journal of Marketing*, February, 1987, pp. 13-20.
2. Sathye, M.(1997), "Internet Banking In Australia," *Journal of Internet Banking and Commerce*, Vol.2, No. 4, September.
3. Booz-Allen & Hamilton, Inc. (1997). "Booz-Allen's Worldwide Survey Revealed A Huge Perception Gap Between Japanese And American/European Banks Regarding Internet Banking."
4. Furst K, Lang W. W. and Nolle E. Daniel (1998), "Technological Innovation in Banking and Payments: Industry Trends and Implications for Banks," *Office of the Comptroller of the Currency, Quarterly Journal*, Vol. 17, No. 3, September.
5. Suganthi, Balachandher, and Balachandran, (2001) *Internet Banking Patronage: An Empirical Investigation of Malaysia*. *Journal of Internet Banking and Commerce*, Vol.6, No.1, May.
6. V.K.Chopra: "Emerging challenges, Strategies and Solutions in Indian Public Sector banks", *IBA Bulletin, Special Issue*, March 2001.
7. Jun, M. and Cai, S. (2001). *The key Determinants of Internet Bank Service Quality: a Content Analysis*, *International Journal of Bank Marketing*, 19(7): 276–291
8. Dr.N.B.Jadhav, Mrs.Poonam R. Lohana and Mr. Rupesh Dargad, "Customer perception and attitude towards e-banking", *Management Prudence Journal*, Vol.2 No.1, 2011.
9. K.T. Geetha &V.Malarvizhi, "Acceptance of E-Banking among Customers", *Journal of Management and Science*, 2011, Vol .2, No.1, pp.1-72.
10. M. Mohammed Siddik and Dr. M. Selva Chandra, "A Study on Customer Satisfaction Towards E-Banking Services of ICICI Bank in Chennai", *IJEMR*, September, 2011, Vo. 1, Issue 4, pp.1-14.



## DIGITAL INDIA: A VISION TO EMPOWER RURAL INDIA

**Dr. Dimpal Vij\***

\*Associate Professor,

Dept. of Economics,

MMH College, Ghaziabad (UP), INDIA.

Email id: [dimpal.vij@rediffmail.com](mailto:dimpal.vij@rediffmail.com)

---

### ABSTRACT

*India is a land of villages with 68% of people living in around 6,49,481 villages. Without prospering our villages India cannot progress. Since independence various programmes have been initiated to develop Indian villages but failed. Indian villages look far behind in comparison to urban India. The coming age is of knowledge economy. With increasing use of smart phone, it is possible now to provide different services with one click. To bridge the gap of digital divide between rural and urban India, Indian government has launched a program 'Digital India' on July 1, 2015 with well-defined objective of connecting rural areas with high speed internet network and improving digital literacy. Digital India is a dream project of Indian government to ensure that government services are made available to all citizens electronically and digitally anywhere, anytime, on any device that is easy to use, highly available and secured. It is to transform India into a knowledge economy and digitally empowered society with good governance for all citizens. The programme offers a number of digital solutions in almost all sectors education, health, agriculture, administration, financial inclusion etc. This paper is a modest attempt to find out the impact of Digital India in empowering rural India, its challenges and what other initiatives can be taken in it to make it more effective so that urban-rural digital divide may be filled and our villages may also develop and reap the benefits of digital revolution that is taking place all around the world.*

**KEYWORDS:** *Digital India, Rural India, Empowerment, Digital Divide, Knowledge Economy*

## INTRODUCTION

Digital India launched on July 1, 2015 is a dream project of Indian government to transform rural India into a knowledgeable and digitally empowered society where all information and government services are available to them on a single click. It is a step of the government to motivate and connect rural India to a knowledgeable world. Through this government want to end rural-urban divide. Guided by the idea of **urban**, providing urban amenities to rural by preserving the ethos of the villages, the initiative includes to connect rural India with high speed internet network. The digital India vision is centred on **3 key areas**:

- Creation of Infrastructure as a utility to every citizen
- Delivery of Governance and services on Demand
- Digital Empowerment of all Citizens

The vision aims to transform India into a digitally empowered society and knowledge economy through infrastructural reforms such as high -speed internet in all Gram Panchayats, life long digital identification of all citizens by linking them with **AADHAR**, mobile banking to all, easy access to common services centres (CSCs) etc. The programme is to wipe out the digital divide between rural and urban India, connecting and empowering 130 crores Indians with offering them a number of digital solutions in almost every sector whether it is education, health, agriculture, administration and so on while generating huge employment through CSCs and IT jobs.

## LITERATURE REVIEW

**Gupta and Arora** (Gupta N. &, 2015) in their study found the impact of Digital India programme on India's rural sector. They found that many schemes have been launched in Digital India to boost agriculture sector and entrepreneurship development in rural areas that will also led a stage for rural women empowerment.

**Rani** (Rani, 2016) concluded that the Digital India programme provides a huge opportunity to use the latest technology to redefine India but many projects require some transformational process, reengineering, refinements to achieve the desired service level objectives.

**Jamshed Alam Ansari** (Ansari, June 2016) in his study dreamt a rural India 2019 where villages have been converted into a knowledge economy and all services are available to villagers either on mobile or tablet or common service centre of the village.

**Tukesh Kumar et. Al** (Kumar Tukesh, 2017) in their study found digital India programme very useful not only in empowering rural entrepreneurs but also empowering rural India Women.

**Shekhar Srivastav** (Srivastav, 2017) in his study found out the impact of various digital services on the life of people and the major challenges faced by digital India programme.

### Concept of Digital India in Rural Areas

Digital India was launched with a well-defined objective of connecting rural India with high speed internet network and broad band connectivity along with digital literacy. It is to ensure that government services are available to all citizens electronically on a single click on their mobile or smartphone or common service centres with one mission and target to take the nation forward digitally and electronically. The idea is to achieve digital innovation and create positive impact for the people living in rural areas. With an investment of Rs. 1.13 lakh crores government want to change the work culture of the country by being more transparent, accountable and easy

accessible. Taking the advantage of young population and IT sector of India government new vision is **IT (Indian Talent) + IT (Information Technology)= IT (India Tomorrow)**. The programme weaves together a large number of thoughts and ideas into a single, extensive vision and making the mission transformative in totality. Digital India Programme is based on **9 pillars**

–

### **Pillar – 1 Broadband Highway**

To promote high speed broad band highways through fibre optics to connect all Gram Panchayats, remote areas, government departments etc. User friendly web-based portals and mobile apps to be developed to access online information to be used.

### **Pillar -2 Universal Access to Phones/Mobiles**

To provide uncovered villages with mobile connectivity with 3G, 4G & 5G speed of internet connectivity

### **Pillar -3 Public internet Access**

To open Common Service Centres (CSCs) in every Gram Panchayat to provide government services to all those who don't know use of mobile/smartphone. Post offices to be converted into multi-services centres.

### **Pillar - 4 E-governance**

- By using ICT government want to ensure that all database of all citizens from cradle to grave and information is available in electronic form and not manual
- Use of on-line repositories Eg. School certificates, voter ID card etc. so that people don't require to submit these documents in physical form
- Integrating the platforms such as Aadhar, payment gateway, mobile platforms etc.
- Online application and tracking of their status
- Simplifying the forms by asking for the minimum and necessary information only
- Using ICT for Public Grievance Redressal

### **Pillar-5 E-Kranti – Electronic Delivery of services**

E-Kranti comprises 41 large e-governance initiatives called “Mission Mode Projects” which include

- ✚ **E-Education** – Connecting all school and colleges with broadband and free Wi-Fi Digital Literacy Program and MOOC (Massive online open courses) for developing E-education
- ✚ **E-Healthcare** – would cover online medical consultation, online medical records, medicine supply, Pan-India exchange for patient information
- ✚ **Farmers-** to get real time price information with online ordering of inputs, online cash loan and relief payment with mobile banking
- ✚ **Financial Inclusion** – Mobile Banking, Micro ATM programs, CSCs and post offices to provide services for online money transfer
- ✚ **Security** – Mobile based emergency services and disaster related services to be provided to people on real time basis to minimise loss of time and property
- ✚ **Justice** – E-courts, e-police, e-jails, e-prosecution to reduce the delays in courts
- ✚ **Cyber Security** – National cyber security co-ordination centre to be set up to ensure safe and secure cyber space within the country



### **Pillar -6 Information to All**

People would have open easy to access information, open data platform for all government programmes and can convey with government through websites, mobile apps and social media.

### **Pillar – 7 Electronic manufacturing**

To make India electronic manufacturing hub with net zero import target focusing on manufacturing of set top boxes, mobiles, consumer and Medical Electronics, smart energy metres, smart cards, micro ATMs etc.

Incubators, clusters to promote innovation and entrepreneurship. Government procurement mandatory from local manufacturers and skill development to meet HRD requirement of the industry.

### **Pillar -8 IT for Jobs**

To train 1 crore students from small towns and villages for jobs in IT sector and setting up of BPOs in north-eastern states and Telecom Service providers (TSP) to train 5 lakh rural youths to cater their own needs of maintaining mobile towers in their areas.

### **Pillar – 9 Early Harvest Programmes**

- Biometric attendance in all government organisations
- Wi Fi in all universities
- Public Wi-Fi spots
- To provide secure e-mail within government and making e-mail primary mode of communication
- SMS based weather information and Disaster alerts
- School books to be e-books
- National portal for Lost and Found Children

### **Key Projects under Digital India**

The basic aim of all the pillars described above is to create knowledgeable society that have access to every information and to create jobs for large number of unemployed youths by upgrading their skills. To empower rural India Many key projects have been started till now under Digital India.

1. **Digital Locker System – for paperless governance** To minimise the usage of physical documents and enable sharing of e-documents across agencies Digi Locker facility has been launched to store crucial documents like Voter ID Card, Pan Card, BPL card, Driving License, education certificates etc. This will also help to check fraud or duplicate documents.
2. **E-sign Framework** – to allow people to digitally sign documents online using AADHAR authentication
3. **My Gov.in** – a platform provided to people for citizen engagement in governance through a ‘Discuss’, ‘Do’ and ‘Disseminate’ approach. It can be accessed through at <https://mygov.in/>
4. **Common Service Centres (CSCs)** – are information and communication technology enabled service delivery points at every place for delivery of government financial, social and private services such as applying online passports, land record, digital locker, Aadhar Card, health and financial services to rural India. Like-wise **Internet Kiosk** is a kiosk with one or more computers, a tablet, internet connection with a web cam that can be set up in

villages to be used as the hub of rural connectivity for providing education and training, information about agriculture, health care, employment news and market information.

5. **Swachh Bharat Mission (SBM)** – mobile app to be used by people to achieve targets of Swachh Bharat Mission.
6. **National Scholarship Portal** – is a one step solution for all scholarships provided by government of India right from submission of student application, verification, sanction and disbursal to end beneficiary
7. **E-hospital** – online registration under e-hospital initiative enables people to avail services like online registration, payment of fees and appointment, online diagnostic reports, consultation with doctors etc. **AROGYASHAKTI** a mobile application that helps rural women entrepreneurs deliver preventive healthcare at rural doorsteps. Women equipped with tablets and mobile healthcare services like Glucometer, BP checking machine visit homes and collect data from village women. This data can be accessed by doctors at any location who could provide relevant advice to the patients remotely.
8. **Digital Agriculture** – Farmers can interact with agriculture experts on digital platform and learn about new techniques and methods. For eg. **Digital Green** uses participatory videos to explain farmer's best management practices under similar circumstances. A virtual platform called **NAM (National Agriculture Market)** is launched to inter connects Mandis in various states electronically to ensure maximum price for farmers for their produce.
9. **Digitize India Platform (DIP)** – undertaken by Deity for large scale digitisation of records in the country to facilitate easy and efficient delivery of services to citizens.
10. **Bharat NET** - a high speed digital highway to connect all 2.5 lakh Gram Panchayats of the country to benefit rural India.
11. **Wi- Fi Spots** - development of high speed Wi-Fi networks throughout the country to improve digital connectivity.
12. **Direct Benefit Transfer (DBT)** scheme to deposit money directly to beneficiary account for all government schemes.

**India Post Payment banks** – launched on September 1, 2018 in all 650 districts India post payment bank will provide all banking services to rural people at their doorstep where post man will go home to home with POS machines and will provide all banking services like deposit, transfer, withdrawal of money besides providing all utility services like bill payment, insurance etc. By December 2018 all 1.55 lakh post offices of the country will be converted into IPPB and 3 lakh postman will work as a banker to the public by providing door to door banking services to them. (DJ Sept. 2, 2018)

### **Achievements of Digital India Till Now**

Now let us see Digital India achievements till now in its key projects

1. **Digital Locker System (Digi Locker)** – Launched on July 2016, till now 197 crore documents have been placed in Digi locker enabling access to over 88 lakh users. Total registered users are 1.42 crore while total 292 crore documents issued till august, 2018. For the first time CBSE 10<sup>th</sup> and 12<sup>th</sup> results, ICSE and NEET results are also sent digitally into digital locker.
2. **Jeevan Pramaan** -It is an AADHAAR based platform for biometric authentication of
3. Pensioners and senior citizens. Since its launch on November 10, 2014 over 150.15 lakh pensioners have registered on portal till date, which was 16.54 lakh in 2016.

4. **E-Sign** – E-sign (Electronics service Signature) has increased to 4.7 crore in 2017-18 in comparison to 87.11 lakh in 2016-17 and 27 lakhs on 2015-16.
5. **AADHAAR** - Government most ambitious scheme to have digital identification (**AADHAAR**) of all adult people have been completed. Total number of AADHAR account holders reached 121.46 crores in 2018 as compared to 104 crores in 2016.(see table 1)

**TABLE 1 PROGRESS OF AADHAAR**

| Sl. No. | Items   | Status as per 2016               | Status as per 2017 | Status as per 2018 |
|---------|---|----------------------------------|--------------------|--------------------|
| 1.      | <b>Total No. of AADHAR Generated</b>              | 104 crores                       | 119 crores         | 122 crores         |
| 2.      | <b>Percentage of Adult Population on AADHAR</b>   | 86.6%                            | 99.9%              | 100%               |
| 3.      | <b>Total mobile SIMs issued using AADHAR EKYC</b> | Implemented from September, 2016 | 32 crores          | 59.19 crore        |

Source - [https://twitter.com/\\_Digital India](https://twitter.com/_Digital India)

6. **My Gov. in**-launched on July 26, 2014 My gov. portal is a bridge to connect the pulse of the nation with the government. It makes sure that every citizen is directly heard by the government. Started on July 26, 2014 with a modest 8.74 lakh users in the first year My Gov. today has over **64 lakh active users under 64 groups** who contribute their ideas through **781 discussion groups** and participate through **777 earmarked tasks**. It can be accessed through <https://mygov.in/>
7. **Common Service Centres (CSCs)** -Nowadays **3.0 lakh common service centres** are working providing **300 services** among these 1.68 lakhs in Gram Panchayats.(DJ June 16, 2018) These CSCs have provided employment to **12 lakh youth in rural areas** and among them 35000 are women.Rural India is being empowered by using it.
8. On **National scholarship portal** 1.4 crores students are registered. institution registration no. is 14.5 lakh while **32 scholarship schemes** are there (DJ June 16, 2018)
9. On **e-hospital portal** 212 hospitals are registered with **1184 departments** who have given **11.57 lakh appointments**.
10. On **e-national agriculture market** **470 Mandis across 13 states** are connected with 50 lakh registered farmers and 1.4 lakh registered buyers/agents. ((HT November 20, 2017)under the national soil health scheme more than 12 crore cards have been distributed. (twitter, 2018)
11. **Digital Payments** – Digital payments have seen a very good surge in last years. It has reached to **2070.98 crore Rs 8 fold in 5 years**.(Financial Express aug 9, 2018) The maximum payment has been done through mobile wallet second number comes of debit card.(Pradhan, 2018) There is an increment in payment through BHIM and UPI.No. of Banks on BHIM UPI has increased from 44 in April 2017 to 115 in September 2018. Like-wise total digital payment has increased (see Table 2 &3) This time 32 lakhs POS machines are working in which payment is being done through debit or credit cards.

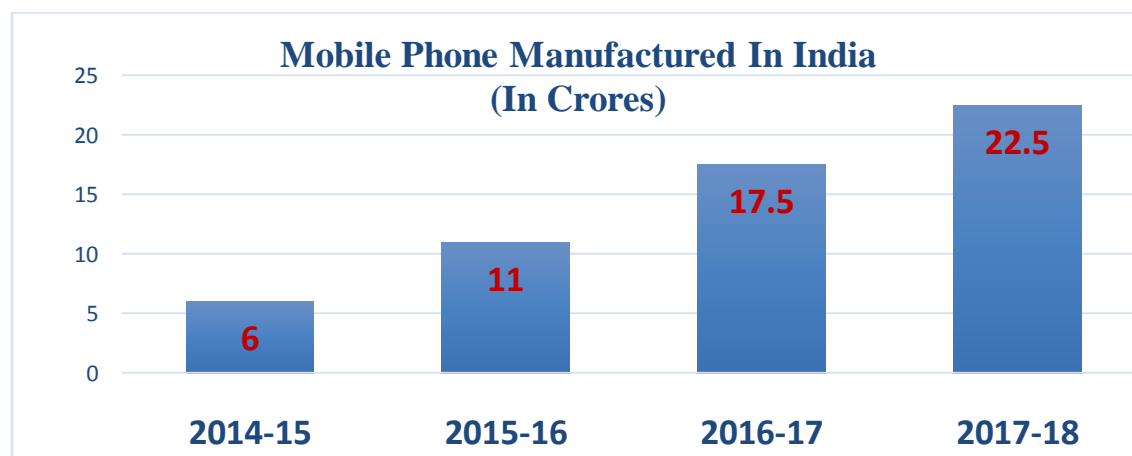
**TABLE 2 DIGITAL PAYMENTS      TABLE 3 DIGITAL PAYMENTS THROUGH BHIM**

| year    | In billion Rs. | Month & year | In million Rs. |
|---------|----------------|--------------|----------------|
| 2015-16 | 5.76           | Feb 2018     | 171.40         |
| 2016-17 | 59.34          | March 2018   | 178.05         |
| 2017-18 | 166.09         | April 2018   | 190.08         |

Source - [https://twitter.com/\\_Digital India](https://twitter.com/_Digital India)

In digital payments district Sonipat of Haryana has achieved first place.(DJ, 2018) The sabji mandi of Sonipat is also digital now.

- 12. In Direct Transfer Scheme (DBT)**Through DBT a total of **2.33 crore bogus ration cards** and **3 crore fake LPG connections** were identified. A total of **Rs. 3.88 lakh crore** has been disbursed through AADHAAR based DBT to beneficiaries of 394 government schemes.Till June 2018 **Rs. 93000 crores** saved by removing fictitious beneficiaries and Middleman.(DJ June 19, 2018)
- 13. Post offices converted into Digital Banking** – In last 4 years government has digitized the largest postal network of the world. All 1.55 lakh post offices will be connected with India Post Payment Banks (IPPB). (DJ April 9, 2018) Core Banking Services (CBS), ATM, Internet and mobile banking are being provided to customers enrolled with post office saving banks to transfer money anytime and anywhere. **Postinfo’ app** provides online tracking of speed post, parcels and services like POSB, interest calculator etc.
- 14. Growth in Number of Mobile Phone Units-** from just 2 factories of mobile manufacturing in 2014, India has got **120 mobile manufacturing factories** in 2018.(Pradhan, 2017) The year 2017 saw a 27% jump in the investment on electronic manufacturing when total volume of investment reached to 1.57 lakh crore from 1.43 lakh crore in 2016. There has been almost 60% rise in the production of mobile phones and it reached 17.5 crores units in 2016-17 from 11 crore units in 2015-16. Mobile manufacturing in India will touch 1, 32,000 crores by the end of 2018. (News, 2018) (see figure 1)

**Figure 1**Source - [https://twitter.com/\\_Digital India](https://twitter.com/_Digital India)

Not only mobile manufacturing but use of data per person in India has increased from 20 crore GB to 1 Arab GB after the launch of Reliance Jio within 6 months only. (DJ April 8, 2018) According to one report after JIO cost of usage of per GB data has reduced from Rs. 152 to Rs. 10 only. The number of mobile phone users has reached 121 crores by December 2017 while number of internet users are 50 crores now. By 2017 JIO customers were using 10 GB data per day so after China India has reached number second in downloading Apps.

**15. Employment Generation** – In 2017 IT industry provided jobs to 1,05,000 employees while it is set to grow at 8% in 2018 offering direct jobs to 3.97 million people. from mobile manufacturing only around **4 lakhs direct and indirect employment** were created in which alone 2.4 lakhs jobs were created in 2017. (Pradhan, 2017)

**16. Digital Literacy**– for Digital Literacy Government has started many programmes. In UP Universal Immunisation rate has increased from 61% in 2016-17 to 88% in 2017-18 (Sinha, 2018) due to awareness drive and digital literacy where ASHA workers were given mobiles and trained to use them for updating application of daily vaccination. As a result, ASHA workers in rural areas and at various primary health centres now report vaccination details daily.

**17. UMANG APP** – has **66 applications 300 services** provided by **17 states**. Uttarakhand and Nagaland people now can avail e-district services through UMANG App.

Good News are coming from every corner for Digital India. **Kerala** has become the first state to become fully digitalized on Feb 25, 2016 (HT Feb 28, 2016) with broadband connectivity in every Gram Panchayat. It has 600 e-governance applications covering all departments and all available on mobile platform. More than 3000 offices in the state have already turned digital and model of student police cadets have been adopted to train 10 lakh people in Panchayats and remote areas by providing them tablets.

To Empower Rural India **ICICI bank** digitalised 100 villages in 100 days and dedicated them to nation on May 2, 2017 by providing vocational training to 11,300 villagers including more than 7500 women. **Himachal Pradesh Vidhan Sabha** is totally digital. Many villages are digital now like **Dhanuri village of Greater Noida, Akoda village in Sabarkantha District** in Gujrat, **Surakhpur village in south-west Delhi, Dudhli village in Uttrakhand, Mori village in Sakhineti Palli Mandal in east Godwari District of Andhra Pradesh, Punsari village in Gujrat** so an and so forth.

Another encouraging news is that a **coolie Shreenath** taking advantage of free Wi-Fi internet services provided at Ernakulam (Kerela) railway station in 2016 under Digital India Program clears civil services exam. (PTI, 2018) Likewise **ATM Didi** is providing pensions to widows, aged, handicap people. In Jharkhand Pakud area with the help of SHGs (Self-help Groups ) Micro ATMS (POS machines) are being provided to women who go door to door and provide pensions to the aged people who are unable to come to bank. For eg. **Shaista Didi** of Pakud area by going door to door with POS machine providing banking and pension facilities to Adivasi and aged people without any cost. The commission is provided to them by banks. (DJ July 3, 2018) This is a case of real empowerment of unprivileged and poor people through Digital India.

## CHALLENGES TO DIGITAL INDIA

1. **The slow and delayed infrastructure** is the biggest challenge before digital India. Another problem is to provide high speed internet connectivity and broadband facilities to rural and remote areas. Though after JIO speed and connectivity both have increased but still rural areas are far behind as they don't have proper electricity. Without electricity it is impossible to run digital India programme successfully.
2. Second problem is of **digital literacy**. Though India has achieved target of **Sarv Shiksha Abhiyaan** but adult literacy rate is very poor. According to World Economic Forum (WEF) 2016 report, nearly 33% of Indian population is functionally, one-third of youth do not attend secondary education then how to achieve target of digital India with such functionally illiterate adult population.
3. Third problem is that maximum information or internet is either in English or Hindi and very less content is available in regional languages while rural people maximum use their local or regional language that is very difficult to understand by internet. India being a very vast and diversified country in terms of language, culture and laws which vary from states to states. Complete integration in terms of technology and language is a herculean task.
4. Digital India means work flow becomes automated and administrative system becomes more efficient, faster and transparent means reduced scope for corruption. Thus, a section of official who are used of corruption try to disrupt the system in various ways as happened in case of DBT and also happening in case of linking AADHAAR with all government benefits.
5. Another problem is of **cyber hackers**. As India is growing economy and digital transactions are increasing. This has caught attention of cyber hackers. Cyber attacks and frauds are increasing day by day badly impacting the dream of digital India. (see Table 4)

**TABLE 4 CYBER FRAUDS IN INDIA**

| Year    | Total No. of Cyber Fraud Cases | Money fraud (In Crores) |
|---------|--------------------------------|-------------------------|
| 2015-16 | 1,191                          | 40.20                   |
| 2016-17 | 1,372                          | 43.18                   |
| 2017-18 | 2,488                          | 149.62                  |

Source -(Financial Express aug 9, 2018)

According to latest Report of Global Financial Information Company Indians are 25% more vulnerable to cyber frauds in comparison to other countries of Asia-Prashant and every one out of 4 Indians is met with Financial cyber frauds. (DJ June 19, 2018)

6. Another big problem is of **cyber security and data theft** as recently happened when **Cambridge Analytica** stole the user's data from Facebook and sold it to political parties to be used for election campaign. As there are no strict laws and penalty in India regarding data theft so Facebook only said sorry (DJ April 26, 2018) while Cambridge Analytica gave a very poor answer in this regard and government did not do anything for safety of consumer data.

## SUGGESTIONS

1. Public-Private partnership models must be explored for infrastructure development especially in rural and remote areas. Private sector players should be incentivised to provide last mile connectivity.



2. The government should provide additional spectrum to Telecom Service Providers for deployment of high speed data networks.
3. All products and services related to digital India like Mobiles/Smart phones/ Tablets, Telecom systems, networks should be available, accessible and affordable for common man.
4. All government departments and offices should be enforced to use digital platforms for uploading their information and providing benefits to people of all government schemes so that corruption may be checked and timely delivery of services, transparency, accountability may be maintained.
5. We need IT solutions suited for Indian needs. For this push need to be given for innovation and developing low cost technologies. Start-ups need to be incentivized for the development of mile infrastructure, localised services and applications.
6. Digital literacy programmes should be taken in large and in that Kerela student Police cadets model can be adopted where 11<sup>th</sup>, 12<sup>th</sup> students are given the task to digitally literate at least one person. Government can also take help of NCC & NSS students.
7. Most important is to develop an exclusively fully firewalled India Internet Cloud that can provide secure internet network and connectivity for the various needs of the country. People must be ensured that their data will be safe and will not be used/misused for any other purpose.
8. Government should make stringent laws like European countries so that no foreign/Indian company may use/misuse information of the users as happened in case of Cambridge Analytica that took advantage of India's liberal laws and Facebook denied securing user's data as it did in case of European countries. Consumers must have the right to know who is using their data for which purpose?

## CONCLUSION

No doubt Digital India is progressing very good in India and Every day more good news are coming from different parts of the country especially villages as kerela first fully digital state, Akoli village in Telengana 100% digitally literate, Dhanuri village of Greater Noida, punsari village in Gujrat, Upeda village in hapur district Uttar Pradesh, sabjimandi of Sonipat doing very good in digital payments, Shreenath a coolie at Ernakulum railway station cleared civil services examination using free wi-fi services of station or ATM Didi of Jharkhand village so on and so forth still much is to be done to empower our villages as knowledge is power today and many things can be achieved if we get the right information at the right time and in this Digital India can play a very big role. Not only in empowering rural India but also empowering rural women who can access new opportunities, new markets through it and can get platform for their ideas and work through it even the Microsoft IDC Asia-Pacific recent study titled “**Unlocking the economic impact of Digital transformation in Asia-Pacific**” said that Digital transformation in India is expected to contribute about US \$ 154 billion to India's GDP by 2021 and increase the growth rate by 1% annual (Jaiswal, 2018). But to attain this government of India must implement Digital India Programme in its full sense. Starting IPPB from December 2018 is another good step to provide door step delivery of banking services to rural people and tribal through postman when comes true in full sense will help in financial inclusion of rural India after Jan Dhan Accounts. Now Government is moving towards **JAM (Jan Dhan, AADHAAR and Mobile)** that is a good step towards fulfilling its objective of empowered India.

## REFERENCES

- Ansari, J. A., June 2016. Dreaming A Digital Rural India. *Kurushetra*, 64(8), pp. 18-22
- DJ April 26, 2., 2018. *Digital Yug ki chunauti*. New Delhi: Dainik Jagran.
- DJ April 8, 2., 2018. *prati vaycti data upyog teji se bada*. New Delhi: Dainik Jagran.
- DJ April 9, 2., 2018. *Dakgharo Me Milegi Digital banking Ki Puri Suvidha*. New Delhi: Dainik Jagran.
- DJ July 3, 2., 2018. *BuJurgo ki Duiyay le rahi ATM Didi*. New Delhi: Dainik Jagran.
- DJ June 16, 2., 2018. *Digital India se desh me aaye bde badlav*. New Delhi: Dainik jagran.
- DJ June 19, 2., 2018. *AADHAAR ka Vistaar hi sarkaar ka aadhaar*. s.l.:Dainik Jagran.
- DJ June 19, 2., 2018. *Har chhaar me se ek bhartiya hota hai online vittiya dhokhadadi ka shikaar*. New Delhi: Dainik Jagran.
- DJ Sept. 2, 2., 2018. *Banking sewayo se vanchit gavo me dakiya bank laya*. New Delhi: Dainik Jagran.
- DJ, A. 2. 2., 2018. *Digital Bhugtaan me Haryana Ka sonipat number one*. Sonipat: Dainik Jagran.
- Financial Express Aug 9, 2., 2018. *Big Boost to Modi's Digital India; E-payments surge over 8 fold in 5 years 20170 crore*. New Delhi: Financial Express.
- Gupta, N. & A. K., 2015. Digital India: A Roadmap for the development of Rural India. *International journal of Business Management*, 2(2), pp. 1332-1342.
- HT Feb 28, 2., 2016. *Kerela is India's first state to do everything online*. Triruvananthapuram: Hindustan Times.
- HT November 20, 2., 2017. *Ministry of Electronics and Information*. English ed. New delhi: Hindustan Times.
- Jaiswal, S., 2018. *Digital Transformation to Contribute US\$154 Billion to India GDP by 2021*. [Online]  
Available at: <https://news.microsoft.com/en-in/digital-transformation-to-contribute-us154-billion-to-india-gdp-by-2021/> [Accessed 20 May 2018].
- Kumar Tukes, S. P. & A. B., 2017. Role of Digital India in Rural Areas. *International Journal of Advance Engineering & Research Development*, March, pp. 1-4.
- News, G., 2018. *Mobile manufacturing in India to touch Rs 132,000 crore: IT Minister*. [Online]  
Available at: <https://www.gadgetsnow.com/tech-news/mobile-manufacturing-in-india-to-touch-rs-132000-crore-it-> [Accessed 20 May 2018].
- Pradhan, N., 2017. *Mobile manufacturing hub banne ki aur bada bharat*. New Delhi: Dainik Jagran.
- Pradhan, N., 2018. *desh me phir se badne lagi Digital payment ki Raftaar*. New Delhi: Dainik Jagran.
- PTI, 2018. *Really inspiring! Coolie clears civil services written test, and Modi's Digital India played a big role in his dream success*, Kerela: Financial Express.

Rahul, M., 2016. *Digital India:barriere and remedies*. s.l., s.n.

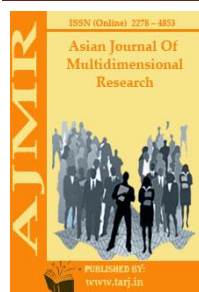
Rani, s., 2016. Digital india: Unleashing Prosperity. *Indian Journal of Applied Research*, 6(4), pp. 187-189.

Sinha, S., 2018. *Awareness drives, digital literacy upped coverage*. Noida: Hindustan Times.

Srivastav, S., 2017. Digital India- major Initiatives and Their Impact: A Critical Analysis. *ELK Asia pacific Journal of Marketing and Retail Management*, 8(3).

twitter, 2018. [https://twitter.com/\\_DigitalIndia](https://twitter.com/_DigitalIndia). [Online]

Available at: [https://twitter.com/\\_DigitalIndia](https://twitter.com/_DigitalIndia) [Accessed 15 May 2018].



## COMPARATIVE STUDY OF ANTHROPOMETRIC MEASUREMENTS AND PHYSICAL FITNESS BETWEEN HARYANA URBAN AND RURAL SCHOOL BOYS

**Surinder Tanwer\***

\*S.A.Jain (PG) College,  
Ambala city, INDIA.

### ABSTRACT

*Study was conducted to analyse the comparison regarding linear measurements value of of height, trunk length, lower leg length and thigh length was more in rural school boys as compared to urban school boys in Haryana. The mean score of height, trunk length, lower leg length, thigh length of rural school boys is a significantly more than urban school boys. Rural school boys have greater height, trunk length, lower leg length and thigh length due to countryside atmosphere, pure diet and physical work in fields which enhance above parameters. Other parameters i.e. sitting height, total arm length, upper arm length, fore arm length and foot length do not show any statistically difference in mean values. The mean value of endurance and speed is lower in rural school boys as compared to urban school boys. The mean value of strength and flexibility in rural school boys is more than urban school boys. The reason that urban school boys has low endurance, speed, strength and flexibility is because urban school boys are more spoiled by recreational facilities which reduce their physical activities and make them lazy and lethargic. Whereas, on other hand rural school boys perform domestic activities and more physical work.*

**KEYWORDS:** *Endurance, Speed, Strength, Trunk Length, Flexibility*

## INTRODUCTION

Measurements of body size include descriptive information as height, weight and surface area, while body proportion describes relationship between height, length, circumference and diameter of various body segments. From public health perspectives strength, endurance, speed, flexibility and agility form components of physical fitness. Explosive strength may be defined as the ability of a sportsman to overcome resistance with high speed. Their exist significant effect of anthropometric measurements of urban and rural group it was reported that top ranking athletes belong to rural socio geographic group (Para et.al 1954). It was reported that different anthropometric variables influence performance of sportsman (Skille and Event 1953).

Current interests in anthropometric measurements, focuses on three areas: growth measure, body type and body composition. With the increasing awareness in sports and physical fitness much emphasis is laid down today on field of anthropometry. However, various anthropometric components vary in different socio-geographic groups. Physical fitness is considered as fundamental criterion in developing an efficient system of selection strategy. There are some evidence that support that the standard of living and luxurious life may influence physical fitness of an individual. Luxurious life may lower ones drive and willingness to work hard and in turn to reach high skill level in sports.

## MATERIALS AND METHODS

In linear measurements height, length, trunk length, leg length, total arm length, upper arm length, fore arm length, lower leg length and foot length were measured using anthropometer. Among physical fitness component endurance was tested by performance in 600 yard run. Strength was tested by standing broad jump method. Speed was tested in 50 yard spirit. Flexibility was tested by reach and sit test, whereas agility was tested by zig-zag run method. For comparing various anthropometric and physical fitness components between rural and urban status t-test was utilized.

## RESULTS

**TABLE I. COMPARISON OF LINEAR MEASUREMENTS BETWEEN URBAN & RURAL HARYANA SCHOOL BOYS.**

| S.No. | Variable         | Urban Mean $\pm$ S.D | Rural Mean $\pm$ S.D | SED   | T-test |
|-------|------------------|----------------------|----------------------|-------|--------|
| 1     | Height           | 166.4 $\pm$ 1.69     | 2.16 $\pm$ 0.11      | 0.37  | 2.22*  |
| 2     | Sitting Heights  | 85.4 $\pm$ 2.66      | 85.4 $\pm$ 2.17      | 0.626 | 0.015  |
| 3     | Trunk Length     | 63.2 $\pm$ 2.53      | 64.7 $\pm$ 2.07      | 0.60  | 2.60*  |
| 4     | Total Arm Length | 74.06 $\pm$ 1.07     | 74.5 $\pm$ 1.78      | 0.37  | 1.18   |
| 5     | Upper Arm Length | 33.3 $\pm$ 2.19      | 33.4 $\pm$ 2.05      | 0.55  | 0.25   |
| 6     | Fore arm Length  | 41.8 $\pm$ 1.87      | 41.06 $\pm$ 1.83     | 0.48  | 1.54   |
| 7     | Leg Length       | 98.9 $\pm$ 1.97      | 100.7 $\pm$ 1.25     | 0.43  | 4.32** |
| 8     | Lower Leg Length | 48.6 $\pm$ 1.82      | 49.8 $\pm$ 2.37      | 0.55  | 2.18*  |
| 9     | Thigh Length     | 50.3 $\pm$ 1.11      | 50.9 $\pm$ 1.17      | 0.30  | 2.21*  |
| 10    | Foot Length      | 18.1 $\pm$ 1.02      | 18.4 $\pm$ 1.69      | 0.36  | 0.721  |

Significant at 5% level = 2.00 Significant at 1% level = 2.65 N-112

Table I shows that the mean score of height, trunk length, lower leg length, thigh length of rural school boys is a significantly more than urban school boys. The t-values for these variables was significant at 1% and 5% level.

**TABLE 2. COMPARISON OF PHYSICAL FITNESS COMPONENTS BETWEEN URBAN AND RURAL SCHOOL BOYS.**

| S.No. | Variable         | Urban Mean $\pm$ S.D | Rural Mean $\pm$ S.D | SED   | T-test  |
|-------|------------------|----------------------|----------------------|-------|---------|
| 1     | Endurance (min.) | 2.24 $\pm$ 0.12      | 2.16 $\pm$ 0.11      | 0.029 | 2.680** |
| 2     | Speed (sec.)     | 7.16 $\pm$ 0.17      | 7.65 $\pm$ 0.22      | 0.05  | 2.19*   |
| 3     | Strength (mts.)  | 1.68 $\pm$ 0.08      | 1.68 $\pm$ 0.08      | 0.017 | 3.43**  |
| 4     | Flexibility(cm.) | 27.13 $\pm$ 0.97     | 27.90 $\pm$ 1.3      | 0.297 | 2.59*   |
| 5     | Agility(sec.)    | 8.90 $\pm$ 1.02      | 8.51 $\pm$ 1.12      | 0.289 | 1.35    |

Significant at 5% level = 2.00 N-112

Significant at 1% level = 2.65

Table 2 indicates that endurance, speed, strength and flexibility is more in rural school boys than those of urban school boys. T-value for endurance and strength is significant at 1% confidence level whereas, t-value for speed and flexibility were significant at 5% confidence level. Agility was found to be statistically equal in both groups.

## DISCUSSION

From the results obtained it was concluded that among linear measurements value of mean score of height, trunk length, lower leg length and thigh length was more in rural school boys as compared to urban school boys. Similarly leg length is more in rural school boys as compared to urban school boys but it was found to be significant at 1% level.

Rural school boys have greater height, trunk length, lower leg length and thigh length due to countryside atmosphere, pure diet and physical work in fields which enhance above parameters. Other parameters i.e. sitting height, total arm length, upper arm length, fore arm length and foot length do not show any statistically difference in mean values. The result of recent work was fully supported by the studies of other scientists who contributed to similar studies (Lau-back 1967 and Tannes 1964). Noe (1964) stated in his studies that urban group pursue wide variety of luxurious activities which reduce their physical fitness. mean value of endurance, speed, strength and flexibility is more in rural school boys is more than rural school boys. The mean value of endurance and speed is lower in rural school boys as compared to urban school boys. The mean value of strength and flexibility in rural school boys is more than urban school boys. The reason that urban school boys has low endurance, speed, strength and flexibility is because urban school boys are more spoiled by recreational facilities which reduce their physical activities and make them lazy and lethargic. Whereas, on other hand rural school boys perform domestic activities and more physical work.

## CONCLUSIONS

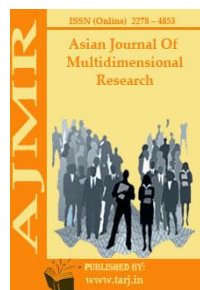
1. Linear measurements value of mean score of height, trunk length, lower leg length and thigh length was more in rural school boys as compared to urban school boys.
2. Rural school boys have greater height, trunk length, lower leg length and thigh length due to countryside atmosphere, pure diet and physical work in fields which enhance above parameters.



3. Sitting height, total arm length, upper arm length, fore arm length and foot length do not show any statistically difference in mean values.
4. Mean value of endurance, speed, strength and flexibility is more in rural school boys is more than rural school boys.
5. The mean value of endurance and speed is lower in rural school boys as compared to urban school boys.
6. The mean value of strength and flexibility in rural school boys is more than urban school boys. The reason that urban school boys has low endurance, speed, strength and flexibility is because urban school boys are more spoiled by recreational facilities which reduce their physical activities and make them lazy and lethargic.

#### REFERENCES

- Behnke, A.R and Royce (1966). Body size, shape composition of several types of athletes. *Journal of sport medicine and physical fitness*. 6: 75-78.
- Berg, J. G. (1969). Relationship between selected body measurements and success in standing broad jump. *Research in health, physical education and recreation*. 223
- Chauhan, M.S. (1988). Correlation of anthropometric variables with success in putting the shot by college women. *National symposium on talent serch in sport, Patiala*.
- Clarke, H.B. (1951). Relationship of strength and anthropometric measures to physical performance involving trunk and legs. *Research Quarterly*, 28:223.
- DeGaray, A.L., Levine, L. & Carter, J.E (1974). *Genetic and anthropological studies of Olympic athletes*. London academic press, Pg-189.
- Durnin, J.V and Rohaman, M.M (1967). The assessment of amount of fat in human body from measurement of skinfold thickness. *British journal of Nutrition*. 21:681-682.
- Habber, L.M (1963). Anthropometric measurement somatotype rating and motor fitness of physical education in South Africa. *Research quarterly*, 34:327-334.



## TECHNOLOGY OF CULTIVATION OF PEKING CABBAGE IN VARIOUS SCHEMES

**Khurramov Ulugbek Holmamatovich\***

\*Assistant of the department of "Vegetable, Melon growing and potato growing" of the Tashkent State Agrarian University, UZBEKISTAN  
Email id: X.Ulugbek1986@mail.ru

### ABSTRACT

*In the Republic, cultivation of Peking cabbage has not enough scientifically-based recommendations on nutrition and placement methods, so many scientists and practitioners have been experimenting with the most delicate habitats in cultivating Peking cabbage and achieving high productivity. In our research, we obtained a 70×30 cm planting scheme as a comparative option. "Xibinskaya" sort of the Peking cabbage was identified on the basis of crop yields and economic efficiency of 2016-2021, which was cultivated on 7 different schemes, as a replica. The article describes the results of experiments on determining the best nutrition of Peking cabbage.*

**KEYWORDS:** *Peking Cabbage, Sort, Hybrid, Cabbage Head, Yield, Early Maturing, Nutrition Area, Leaf, Leaf Surface, Cabbage Weight.*

## INTRODUCTION

Vegetables contain more than a dozen vitamins, mineral salts, enzymes, phytoncides, and other biologically active substances, which can be used to increase people's longevity and ability to work.

The most favorable or optimal nutritional area is not the ability of the plant to accumulate the highest harvest, but the least cost per hectare of crops, and the highest quality yields. Therefore, this issue is constantly being pursued by the scientists of the plant science and is mutually engaged in it. [1]

The area of feeding is a field of land that is occupied by plant in the field, the plant thickness or scarcity is the number of plants in that hectare. The most suitable nutrition area depends on sowing and its varieties, as well as on external factors and used technology. As mentioned above, the plant nutrition area has long been interested many scientists and practitioners in plant growing. The efforts to deeply and accurately study this issue began in the mid-19th century.[2]

In the United States, Peking cabbage is grown between 45-60 cm in rows between 30-45 cm in the row of plants, and on the islands of Mauritius, the plants are placed in 60×60 cm. On the island of Taiwan, it is grown in the rows of 50 cm width while on the island of Puerto Rico it is cultivated 90×25-30 cm. [3]

## METHODS. EXPERIMENT METHODS.

In our country, there is not enough scientifically-based recommendations on the nutrition and placement methods on cultivation of cabbage, so we have taken the scheme of 70×30 cm as a comparative option in our researches. Field experiments were carried out on the field of experimental farming of the Plant Research Institute in 2015-2017, observations, measurements and calculations parts carried out in four repeats 70 cm between rows, 10 m long consisting 7 m<sup>2</sup>. [4,5]

## THE RESULTS OF THE EXPERIMENT.

We have tested the following spacing intervals in our field experiments to determine the Beijing cabbages nutrition and nutrition habits: 70×20; 70×25; 70×30; 70×35; 70×40; 70×45; 70×50 cm, The area of feeding seedlings when they are placed in such a range of 0,140; 0,175; 0,210; 0,245; 0,280; 0,315; 0,350 m<sup>2</sup> respectively.

Planting seedlings of Peking cabbage with a distance of 70×20 cm indicates that it will be 150% more compared to an option compared to the number of plants in the hectare (70×30 cm). In the 70×45-50 cm range of seedlings, the number of crops in the area decreased by -66,7-60,0%, respectively.

Results of biometric measurements show that the intensified planting of plants (1 variant) was lower by 95,5% compared to the number of leaves (variants) and by 112,5-113,7% more than that of controlling the number of leaves 6-7 variants (Table 1).

**TABLE 1.**  
**THE INFLUENCE OF THE NUTRITIONAL FIELD ON THE PEKING CABBAGE PLANTS LEAF GROWING. (2015-2017 YY).**

| The nutritional area of a bush of plant, m <sup>2</sup> | Plants in a hectare |                            | The leaves in a bush of plant |                            | The largest leaf length, cm |
|---|---------------------|----------------------------|-------------------------------|----------------------------|-----------------------------|
|   | Number, pieces      | compared to the control, % | Number, pieces                | compared to the control, % |                             |
| 0,140   | 71,428              | 150,0                      | 23,7                          | 95,6                       | 32,0                        |
| 0,175   | 57,142              | 120,0                      | 24,1                          | 97,2                       | 33,2                        |
| 0,210 control   | 47,619              | 100                        | 24,8                          | 100                        | 34,8                        |
| 0,245   | 40,816              | 85,7                       | 25,7                          | 103,6                      | 35,2                        |
| 0,280   | 35,714              | 75,0                       | 26,8                          | 108,0                      | 37,9                        |
| 0,315   | 31,746              | 66,7                       | 27,9                          | 112,5                      | 39,9                        |
| 0,350   | 28,571              | 60,0                       | 28,2                          | 113,7                      | 41,8                        |
| NSR <sub>05</sub>                                       |                     |                            | <b>1,08</b>                   |                            | <b>1,85</b>                 |
| S <sub>x</sub> , %                                      |                     |                            | <b>3,0</b>                    |                            | <b>3,58</b>                 |

In experimental feeding areas, plants were found to form leaves at different sizes. The largest leaf was found in the nutritional area of 0,315-0,350 m<sup>2</sup>. The size of the leaves in these variants increased by 0,105-0,140 cm relative to the option (0,210 m<sup>2</sup>).

It should be noted that in the densely planted plants, the size of the leaf compared to the control was less than -2,8-1,6 cm. The surface area of the leaves is enlarged due to the increase in the area of nutrition of the plants. Table 2.

**TABLE 2. THE INFLUENCE OF NUTRITION ON THE FORMATION OF VEGETATION ON LEAF SURFACES. (2016-2017 YY).**

| Plant nutrition area, m <sup>2</sup> | number of plants on hectare<br>Thousand pieces | Leaf surface    |                               |                |                               |
|--------------------------------------|--|-----------------|-------------------------------|----------------|-------------------------------|
|                                      |  | in the bush     |                               | on the hectare |                               |
|                                      |  | dm <sup>2</sup> | In comparison with control, % | m <sup>2</sup> | In comparison with control, % |
| 70×20                                | 71,4   | 44,5            | 79,7                          | 317,7          | 119,6                         |
| 70×25                                | 57,1   | 50,6            | 90,7                          | 288,9          | 108,8                         |
| 70×30 control                        | 47,6   | 55,8            | 100                           | 265,6          | 100                           |
| 70×35                                | 40,8   | 62,2            | 111,5                         | 253,8          | 95,5                          |
| 70×40                                | 35,7   | 68,8            | 123,3                         | 245,6          | 92,5                          |
| 70×45                                | 31,7   | 74,7            | 133,9                         | 236,8          | 89,1                          |
| 70×50                                | 28,6   | 78,9            | 141,4                         | 225,6          | 84,9                          |
| NSR <sub>05</sub>                    |  | <b>1,96</b>     |                               | -              |                               |
| S <sub>x</sub> , %                   |  | <b>3,14</b>     |                               | -              |                               |

According to the data in Table 3, the decrease in the nutritional value of the Peking cabbage (in variant 1) has shown that the number of different plant leaves is reduced to -79,7 percent compared to the comparison. In the sprouting area of the large (0,350-0,315 m<sup>2</sup>) area, the surface area of the plant has increased by 141,4-133,9%, however, the surface of leaves was increased in

the smallest space (70×20;), taking into account the number of plants on the hectare of the plant surface of the herbaceous leaves.

As the Peking cabbage seedlings are expanded to the field, the potential for the use of light energy increases due to the expansion of the nutritional area of the soil, thanks to the nutrients from the soil, the gas regimes and, in particular, the increase of the plant's assimilating surface.

In the phenological observations, the period of formation of the cabbage heads did not have a major impact on the duration of the head packing due to the reduction of the vegetation area or the thickness of the seedlings.

**TABLE 3 GROWTH AND DEVELOPMENT OF PEKING CABBAGE GROWN IN DIFFERENT NUTRITIONAL FIELDS. (2015-2017 YY).**

| Nutrition area, m <sup>2</sup> | number of plants, units /ha | The time elapsed before cabbage heads begun to develop | The time passed from planting to maturation | Head development time, days |
|--------------------------------|-----------------------------|--|---|-----------------------------|
| 0,140                          | 71,4                        | 85   | 115   | 42                          |
| 0,175                          | 57,1                        | 83   | 112   | 41                          |
| 0,210 control                  | 47,6                        | 81   | 108   | 40                          |
| 0,245                          | 40,8                        | 80   | 104   | 38                          |
| 0,280                          | 35,7                        | 80   | 102   | 37                          |
| 0,315                          | 31,7                        | 79   | 99  | 36                          |
| 0,350                          | 28,6                        | 77   | 97  | 36                          |

As the area of nutrition increases, the number of bushes in the hectare decreases. It has been found that the cultivated plants grow in the area of large nutrition fields are relatively earlier maturing for 2-4 days than control plants, but the difference was not noticeable in the studied varieties. If in the largest nutritional area 77 days required to cabbage head wipening and 97 days for maturation, thn this result in control variaty was 81 and 108 days.

The ability of plants to have different absorption surfaces on different nutritional areas, their differences in growth and development, the formation of different accelerators, and the impact on cabbage heads development levels the quantity and quality of the product.

**TABLE 4 THE EFFECT OF NUTRITION AREA ON PEKING CABBAGE YIELD. (2015-2017 YY).**

| The nutritional area of a bush of plant, m <sup>2</sup> | Number of plants on hectare thousand pieces | Average weight of cabbage head, kg | The total harvest, t/ha | Additional yield in comparison with control |       | quality product quantity, % |
|---|---|------------------------------------|-------------------------|---|-------|-----------------------------|
|   |   |                                    |                         | t/ha  | %     |                             |
| 0,140   | 71,4  | 0,62                               | 38,2                    | 3,2   | 109,1 | 79,0                        |
| 0,175   | 57,1  | 0,74                               | 36,6                    | 1,6   | 104,6 | 80,0                        |
| 0,210 control   | 47,6  | 0,84                               | 35,0                    | -   | 100   | 82,8                        |
| 0,245   | 40,8  | 0,97                               | 34,6                    | -0,4  | 98,8  | 83,2                        |
| 0,280   | 35,7  | 1,09                               | 34,0                    | -0,1  | 97,1  | 85,9                        |
| 0,315   | 31,7  | 1,15                               | 32,2                    | -2,8  | 92,0  | 86,9                        |
| 0,350   | 28,6  | 1,24                               | 31,4                    | -3,6  | 89,7  | 87,3                        |
| NSR <sub>05</sub>                                       |   | <b>0,14</b>                        | <b>1,96</b>             |   |       |                             |
| Sx, %   |   | <b>4,95</b>                        | <b>4,02</b>             |   |       |                             |

Largest cabbage heads by cabbage head weight formation was observed in the sparse areas (28,5-31,7 thousand). Cabbage heads formed there were heavier compared to control option (47,6 million) to 310-400 grams, or 147,6%. The smallest heads are at the areas where the seedlings are densely planted. When placing 71,4 thousand seedlings at the expense of conditional area, their shaped cabbage heads were lighter by 220 g or -73,8% relative to control. Because of the lack of light and nutrient content on the fields where the crops are found to be extremes, the weight of the cabbage heads does not seem to be heavy, but because of the large number of cabbage, the amount of yield is much higher.

In the feeding areas, where heavy cabbage heads are formed, the quality of the product is higher than other options.

The highest yields were taken from a variant of 71,4 thousand plants, which were taken from the conditional area. The crop yielded 38,2 tonnes, up 3,2 tonnes or 109,1% more than control. The difference between the most sparse and most sophisticated varieties of plants was 6,8 tonnes. It has been established that the area of nutrition of plants can be increased to a certain extent. In the most densely populated version there was a decrease in cabbage weight and product quality. Thus, the increase in plant thickness by 23,8 thousand more than the control of the plant has a negative impact on the quality of its products and, conversely, the decrease in the number of plants by 19,0 thousand hectares, increase the quality of the cabbage and the quality of products.

#### **Economic efficiency of cultivation of Peking cabbage on different planting schemes as a secondary crop.**

The economic efficiency of the Xibinskaya variety of Peking cabbage produced in 7 different schemes was determined on the basis of the technology card 2016-2021 (Table 1).

From the figures given in Table 5, the funds spent on the land and its preparation for sowing were the same in all planting schemes (502,100 soums). However, the costs for seedlings production amounted to 6,871.5 soums in the 70×20 cm plan. The increase in the number of seedlings found in the area due to the decrease in the area of studying nutrition showed that the expenditure on it increased from 2,752.4 thousand to 6,871.5 thousand soums.

As a result, the total cost of payment for these schemes varies from 10,400.9 thousand to 22,635 million soums. The thick or sparse sowing of Peking cabbage affects its yield on the surface. In the studied planting scheme, the highest yields (38,2 t/ha) were obtained from the planting of 70×20 cm. The yield from this nutritional site was greater than 6,6-8 t/ha relative to other variants (70×45, 50 cm) compared to 2,2 t/ha compared to 70×30 cm. The cheapest cost of a kg harvest was 70×50 cm, which was 176,6 sums lower than the control version, and the next 70×20,25,35,40,45 cm was 21,8-369,8 sums it was low. In the version of 70×20 cm, the control was up 193,2 soums more.

**TABLE 5. ECONOMIC EFFICIENCY OF CULTIVATION OF PEKING CABBAGE ON DIFFERENT PLANTING SCHEMES IN THE SECOND PERIOD.**

| t/r | Indicators                     | Planting schemes. |       |               |       |       |       |       |
|-----|--------------------------------|-------------------|-------|---------------|-------|-------|-------|-------|
|     |                                | 70×20             | 70×25 | 70×30 control | 70×35 | 70×40 | 70×45 | 70×50 |
| 1.  | 2                              | 3                 | 4     | 5             |       |       |       | 6     |
| 2.  | Direct costs: land preparation | 502,1             | 502,1 | 502,1         | 502,1 | 502,1 | 502,1 | 502,1 |



|     |  |          |          |          |          |          |          |              |
|-----|--|----------|----------|----------|----------|----------|----------|--------------|
|     | for sowing                                 |          |          |          |          |          |          |              |
| 3.  | Costs for seeds seedling preparation, sums | 6,871.5  | 5,495.4  | 4,581.0  | 3,926.5  | 3,335.7  | 2,920.7  | 2,772.4      |
| 4.  | Sowing and care, Soum                      | 8,471.5  | 6,774.8  | 5,647.7  | 4,840.8  | 3,631.1  | 3,139.6  | 3,073.0<br>1 |
| 5.  | Harvesting, soums                          | 1,094.9  | 1,062.2  | 1,051.4  | 1,044.1  | 1,058.6  | 1,015.1  | 993,387      |
| 6.  | transportation of the harvest              | 1,168.0  | 1,133.3  | 1,121.7  | 1,113.9  | 1,129.4  | 1,083.0  | 1,059.8      |
| 7.  | Total expenditures, soums                  | 18,108.0 | 14,967.8 | 12,903.9 | 11,427.4 | 9,656.9  | 8,660.5  | 8,400.6      |
| 8.  | Direct expenses, soums 25%                 | 4,527.0  | 3,741.9  | 3,22.0   | 2,856.8  | 2,414.2  | 2,165.1  | 2,100.2      |
| 9.  | The total expenses soums                   | 22,635   | 18,709.7 | 16,129.9 | 14,284.2 | 12,071.1 | 10,825.6 | 10,500.8     |
| 10. | Quality yield, t/hec.                      | 30,2     | 29,3     | 29,0     | 28,8     | 29,2     | 28,4     | 27,2         |
| 11. | Cost of production, soums                  | 700      | 700      | 700      | 700      | 700      | 700      | 700          |
| 12. | Harvest price is at the hectare            | 21,140   | 20,510   | 20,300   | 20,160   | 20,440   | 19,880   | 19,040       |
| 13. | The cost of 1 t                            | 749,4    | 638,5    | 556,2    | 496      | 413,4    | 381,2    | 386,0        |
| 14. | Net Profit, Soum                           | -1,495   | 1,800.3  | 4,170.1  | 5,875.8  | 8,368.9  | 9,054.4  | 8,539.2      |
| 15. | Profitability , %                          | -6,6     | 9,6      | 25,8     | 41,1     | 69,3     | 83,6     | 81,3         |

When cultivating the Peking cabbage in a variety of planting schemes, the highest net profit yielded a 70×45 cm planting scheme. The net profit gained from it was 9,054.400 soums, which was 4,884.300 soums more than the controlling option.

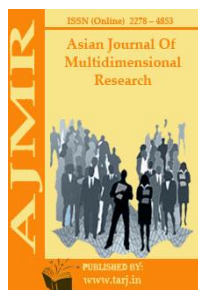
## CONCLUSIONS

1. The largest leaf was found in the nutritional area of 0,315-0,350 m<sup>2</sup>.
2. In the sprouting area of the large (0,350-0,315 m<sup>2</sup>) area, the vegetation surface has increased by 141,4-133,9%, but the maximum number of plants in the hectare is determined by the smallest (70×20;) the surface of the leaves has increased.

3. Because of the lack of light and nutrient content on the fields where the crops are found to be too close in row, the weight of the cabbage heads does not seem to be heavy, but because of the large number of cabbage, the amount of yield is much higher.
4. The highest net profit per unit area is 70×45 cm. The net profit gained from it was 9,054.400 soums, which was 4,884.300 soums more than the controlling option. Thus, when planting "Xibinskaya" sort of Peking cabbage in a 70×45 cm scheme on repeated terms allows to receive the highest net income.

**BIBLIOGRAPHY.**

1. Zuev VI, O.K. Kodirkujaeva head. "cabbage head vegetable crops". The book of Vegetable and Gardening. Tashkent. Economics and Finance, 2010y, pp. 256-257.
2. Kolpakov N.A. "Yield of Peking cabbage at various terms of cultivation" NGAU-1 [26] p. 26-27. 2013
3. Pivovarov P.F., Kononkov P.F., Nikulshina V.A. New on your table. M-Kolos. 1995 pages 222-225.
4. Dospekhov B.A. Methodology of the field experience. -M: Kolos, 1985. pages 272-287
5. Azimov B.J., Azimov B. B. "Methods of conducting vegetable, melon and potato experiments" .- T. National Encyclopedia of Uzbekistan, 2002, pp. 180-198.



## METHODOLOGY OF INFORMATION TECHNOLOGY INFORMATION OF IFODALIZATION OF COMPONENTS IN ORGANIC CHEMISTRY COURSE

**Shernazarov I. E.\*; Abdukadirov A. A.\*\***

\*Academic lyceum teacher in TPTI,  
Email id: shernazarov\_iskandar855@mail.ru

\*\*Professor,  
Doctor of pedagogical sciences,  
UZBEKISTAN.

### ABSTRACT

*One of the most important aspects of reform is the introduction of modern information technologies in the educational process. This course is designed to provide an explicit explanation of the subject, using the pedagogical technologies, to prepare students an animated look or video of chemical processes that are difficult to imagine. The use of modern information technologies in the teaching process of “organic chemistry” enriches science-based guidelines and guidelines for the introduction of information technology into the educational process of continuous education. Interesting animations and slides on the subject are based on the combination of information technology and pedagogical technologies. Through these animations, students can learn the spatial formations of organic matter, their properties, and their properties. Thus, it is easier to absorb the spatial visibility of the substances mentioned above with the help of information technology, and to explain the formulas of organic matter formation [7-11]. This course is designed to provide an explicit explanation of the subject, using the pedagogical technologies, to prepare students an animated look or video of chemical processes that are difficult to imagine.*

**KEYWORDS:** *Pedagogical Technologies, Multimedia, Teaching-Methodological, Informatics, Mathematics,*

## INTRODUCTION

Reforming at all stages of education in the "National Training Program" of the Republic of Uzbekistan is defined as the main task. One of the most important aspects of reform is the introduction of modern information technologies in the educational process. To explain the subject of the chemistry, multimedia, animated electronic textbooks on the subject, the use of space-based models for computer science and the use of computers in the learning process can be explained by the fact that students are more likely to master some topics and increase their interest in the subject. Interesting animations and slides on the subject are based on the combination of information technology and pedagogical technologies. For example, it is desirable to use interesting information on the subject in other disciplines to explain the subject, and to use information communication and pedagogical technologies when explaining the simplest methods to the students [1, 2].

Continuation of further improvement of the continuous education system in the development of education and science in the "Priorities of social sector development" in the five priority areas of the development of the Republic of Uzbekistan in 2017-2021, increasing the capacity for quality educational services;

In order to undertake targeted measures to improve their material and technical basis by equipping educational institutions with modern teaching and laboratory equipment, computer equipment and teaching-methodological manuals; to improve the quality of general secondary education, to enhance the effectiveness of teaching at a time when full-fledged ICTs have been implemented to deepen the teaching of foreign language, informatics, mathematics, physics, chemistry and biology, Since education is in demand today, the topic chosen is very important for pupils.

The use of modern information technology in the subject of "organic chemistry" teaches students to express their opinions in the group, to think independently and to work, to be sober and to be responsive. They increase their interest in "Organic Chemistry" and encourage students to take action. The use of modern information technologies in the teaching process of "organic chemistry" enriches science-based guidelines and guidelines for the introduction of information technology into the educational process of continuous education.

Access to information technology is based on computer, video projector, video coupler, cad scope, slides, and related animation and Internet data.

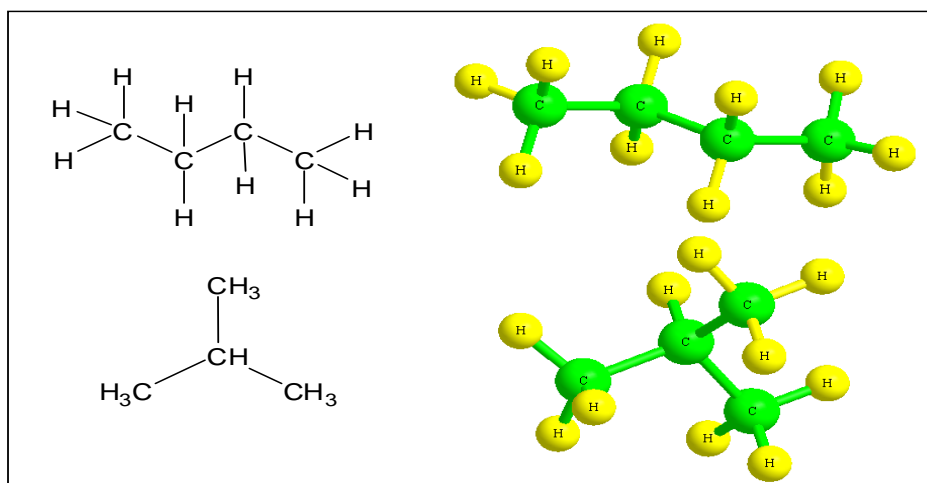
This course is designed to provide an explicit explanation of the subject, using the pedagogical technologies, to prepare students an animated look or video of chemical processes that are difficult to imagine. The animation prepared for the students should include an animated look of slides, interdisciplinary communication, increased interest of students in science, important aspects of organic chemistry, reaction equations, properties of substances, reactions, spatial visions, usage and laboratory processes.

Through the use of information technology and Internet data, students are encouraged to apply their practical and laboratory work to increase students' interest in science, understanding the nature of chemical reactions, and the ability to fully understand the quality and structure of chemical products.

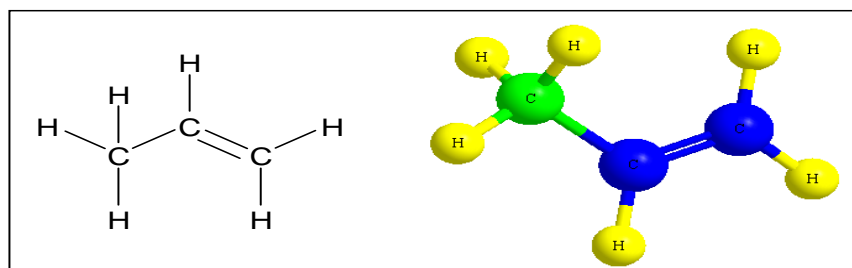
It is well-known that students have the ability to recall color-enhancing processes that they themselves see most often. From the age of childhood, they are well aware of how to paint colorful things, such as painting various pictures and colors [4, 5, 6].

Using the Chem3D Ultra 10.0 software and the use of information technology, we can describe the organic matter in the light of the ability of the readers to take into account the abilities of organic matter by the use of color images and animations in their spatial appearance. For example

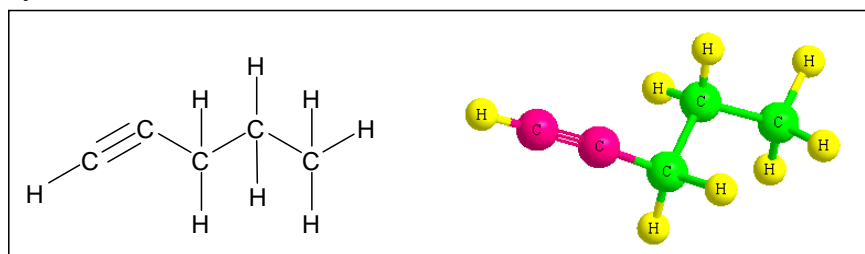
Example 1: Isolation of butane ( $C_4H_{10}$ ) in saturated hydrocarbons (normal-butane and isbutane) as follows:



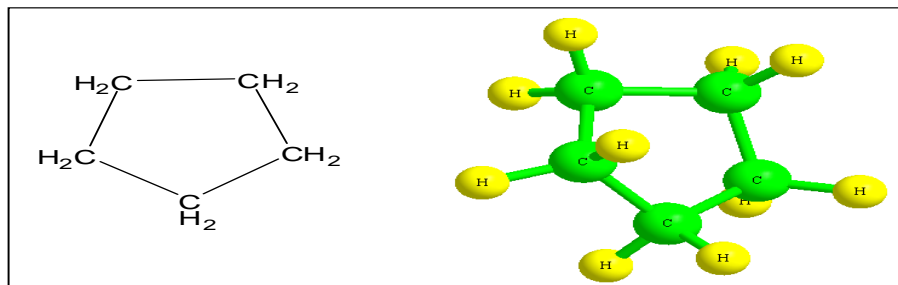
Example 2: The spatial appearance of  $C_3H_6$  in unsaturated hydrocarbons can be described as follows.



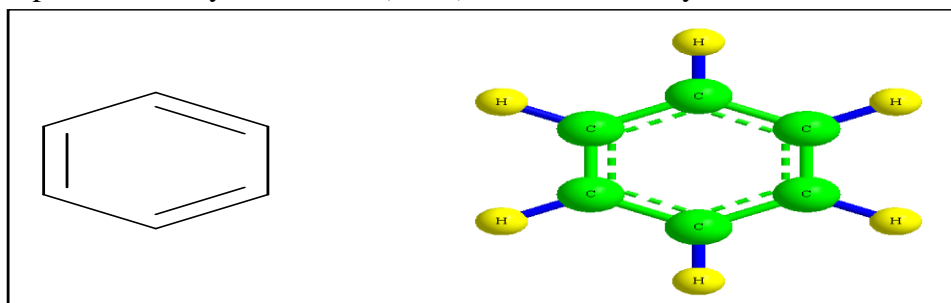
Example 3: We describe the color image of the spatial appearance of the pentin-1 ( $C_5H_8$ ) content of unsaturated hydrocarbons. .



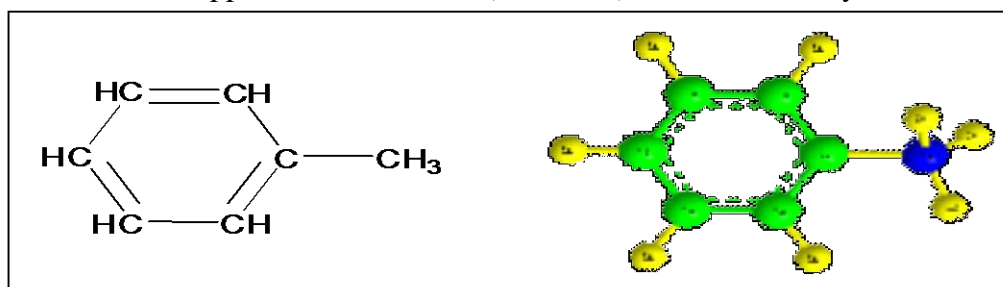
Example 4: Cyclopentane ( $C_5H_{10}$ ) cycloalkanes spatially.



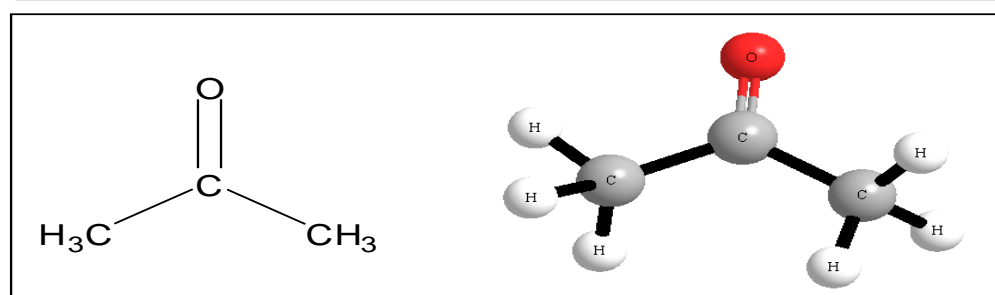
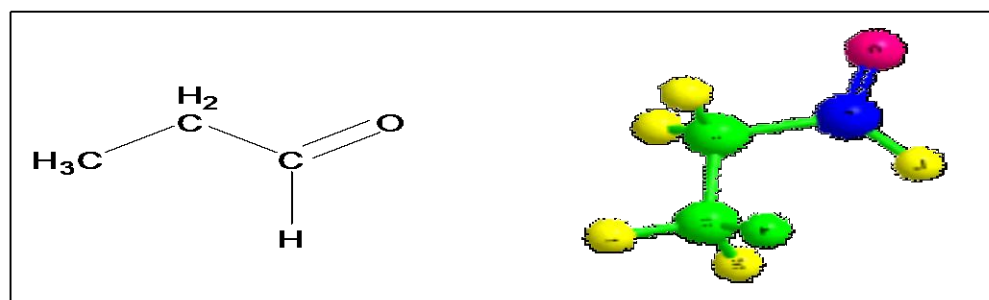
Example 5: Spatial visibility of benzene ( $C_6H_6$ ) from aromatic hydrocarbons



Example 6: The cosmic appearance of toluene ( $C_6H_5CH_3$ ) from aromatic hydrocarbons.

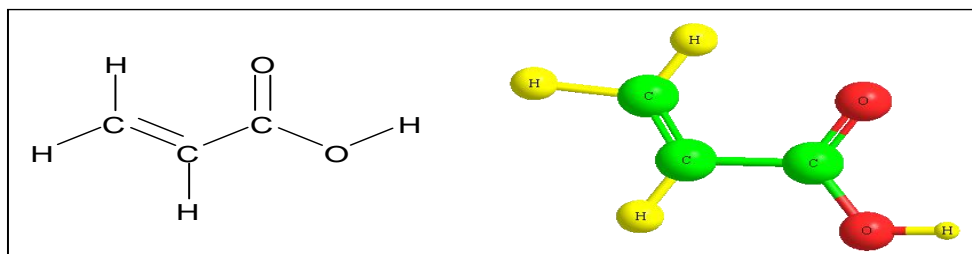
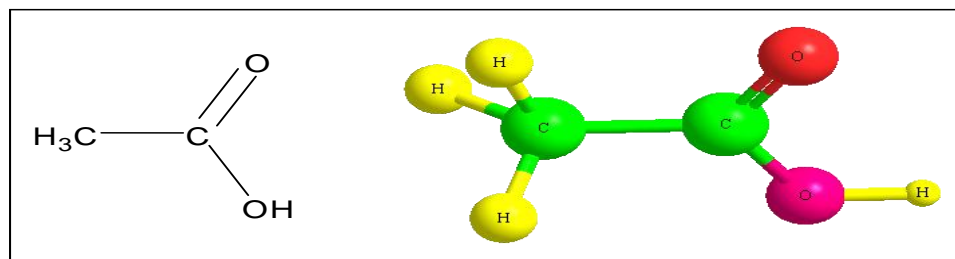


Example 7: The aldehyde and ketones of oxygen organic matter ( $C_3H_6O$ ) are expressed in spatial representation.

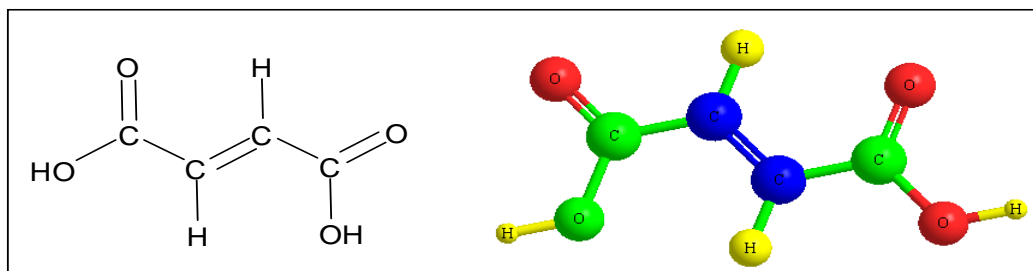
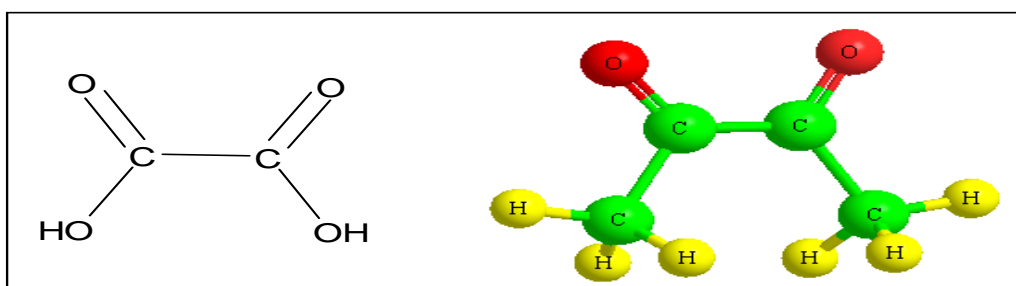




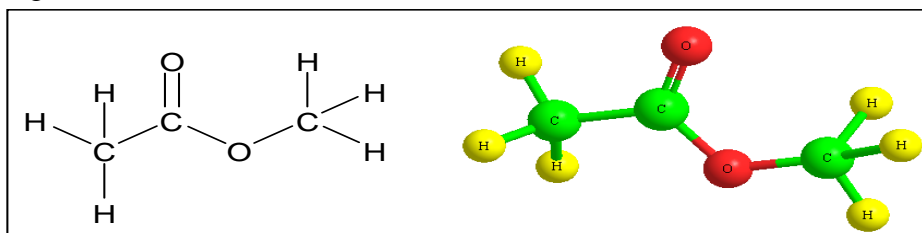
Example 8: Acrylic acid ( $\text{CH}_2 = \text{CH}-\text{COOH}$ ) of acetic acid ( $\text{CH}_3\text{COOH}$ ) and unsaturated monocarboxylic acids from saturated monocarboxylic acids from oxygenated organic compounds are described as follows.



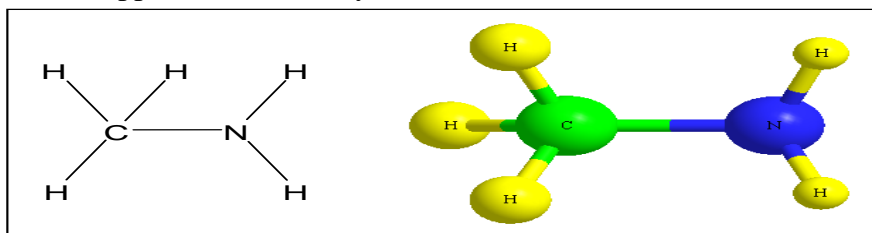
Example 9: oxalic acid organic oxalic acid oxalic acid ( $\text{HOOC}-\text{COOH}$ ) and fumaric acid ( $\text{HOOC}-\text{CH} = \text{CH}-\text{COOH}$ ) from unsaturated dicarboxylic acids will see the spatial appearance of oxalic acid and fumaric acid.



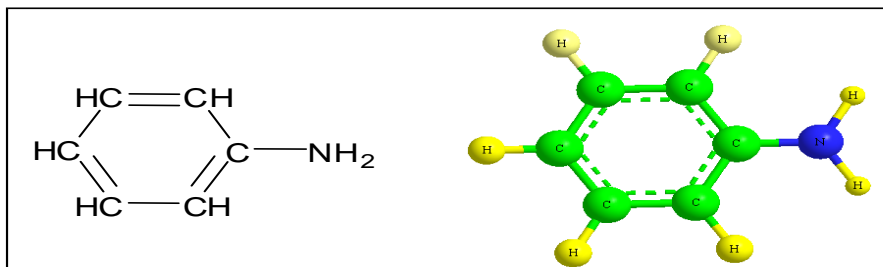
Example 9: Spatial viscosity of methyl acetate ( $\text{CH}_3-\text{COOCH}_3$ ) from complex ethanol in oxygenated organic matters.



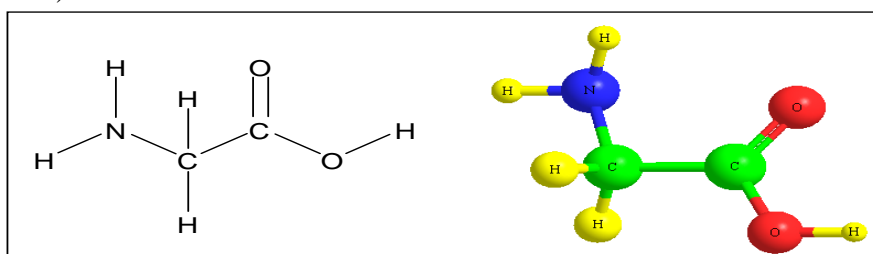
Example 10: Methyl amine ( $\text{CH}_3\text{-NH}_2$ ) from the nitrogenous organic compounds according to the above, the cosmic appearance of methyl amine



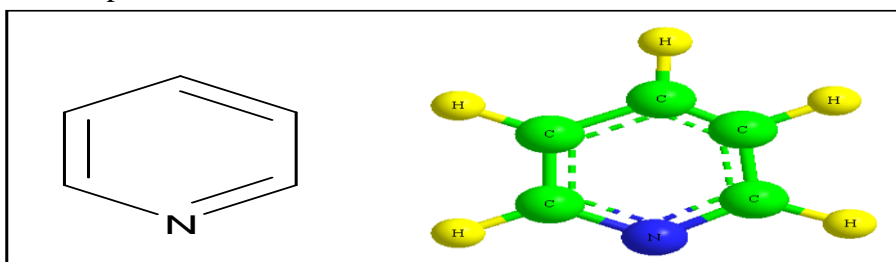
Example 11: The composition of aniline ( $\text{C}_6\text{H}_5\text{-NH}_2$ ) from nitrogenous organic compounds according to the above describes the cosmic appearance of aniline.



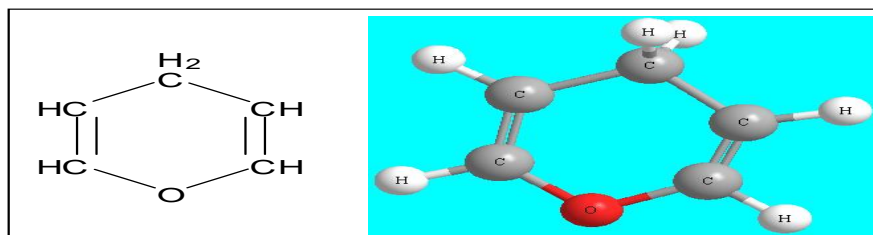
Example 12: We represent the spatial appearance of aminosirka acid (glycine) ( $\text{NH}_2\text{-CH}_2\text{-COOH}$ ).



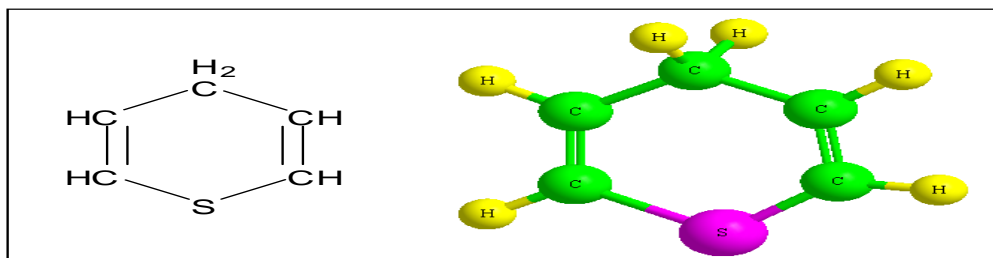
Example 13: The spatial appearance of pyridine ( $\text{C}_5\text{H}_5\text{N}$ ) from nitrogen-containing heterocyclic compounds can be expressed as:



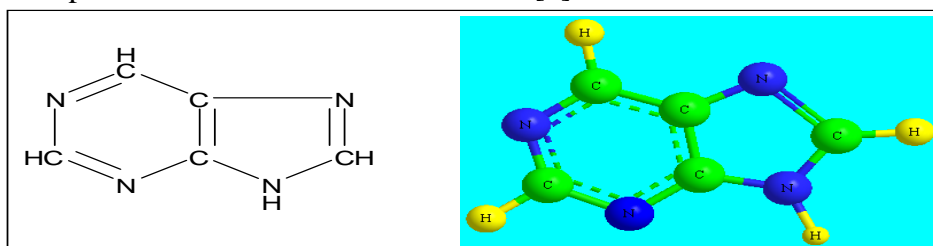
Example 14: Piran ( $\text{C}_5\text{H}_6\text{O}$ ) spatial blinds from oxygen-containing heterocyclic compounds can be described as follows.



Example 15: Spatial visibility of thiopyrane ( $C_5H_6S$ ) from sulfur heterocyclic compounds is as follows:



Example 16: The spatial appearance of the purine ( $C_5H_4N_4$ ) content of nitrogen-containing heterocyclic compounds can be illustrated as follows [3].



An animated explanation of the above-mentioned formulas using information communication to the readers showed that readers could easily detect the elements of any organic matter by using these formulas and hybrid species. Thus, it is easier to absorb the spatial visibility of the substances mentioned above with the help of information technology, and to explain the formulas of organic matter formation [7-11].

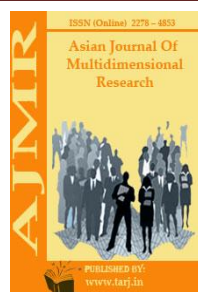
In order to study organic chemistry, simple simulations are made on the basis of integration of information communication and pedagogical technologies and color animations have been developed, reflecting their 3D appearance. Through these animations, students can learn the spatial formations of organic matter, their properties, and their properties.

The abovementioned formulas were used for the pupils of the academic lyceum of the Tashkent Pediatric Medical Institute.

## LITERATURE

1. Avlyakulov N.X. Modern teaching technologies. Methodical guide. T. 2001. -B.164.
2. Abdukodirov A., Pardaev A. Methods of using modern pedagogical technologies in education and upbringing: Tashkent: Istedod, 2014. -B.5-105.
3. Abdusamatov A., Mirzaev R., Ziyaev R. Organic chemistry "for academic lyceums and professional colleges" - Tashkent: Teacher, 2016.-B.272.
4. Information technologies. Textbook for academic lyceums and professional colleges / Abdukodirov AA, Khayitov A.G., Shodiyev R.R. - T.: Teacher, 2002. - B.148.
5. Babanskiy Yu.K. Teaching Methods in Modern High School: Tashkent. Teacher, 1990. - B.230.
6. Begimkulov U.Sh. Scientific and theoretical foundations of introduction of modern information technologies in pedagogical education: -Tashkent. Fan, 2007. -B.164.

7. Borovskix. T.A. Individualization obucheniya khimii na osnove sovremennykh obrazovatelnykh tekhnologiy // - Moskva. MPGU. Virtual Gallery, 2011. -B.217.
8. Z. Halikova "Pedagogical Innovations and Their Peculiarities" Educational Problems № 1. 2010. 48-49 b.
9. Zashivalova E. Yu. Methodology Komp'yuternoe obucheniya khimii v osnovnoy shkole.. Dissertation pad nauk - St. Petersburg: - 2000.-B.167.
10. Internet data at <https://www.youtube.com>
11. Yuldashev J. G., Usmanov S.A. Implementation of modern pedagogical technologies // - Tashkent: Science and Technology, 2008. 132-134 b.



## MUHAMMAD IBRAHEEM AL-GEYOUSHI'S CONTRIBUTION ON THE STUDYING OF SCIENTIFIC HERITAGE OF AL-HAKIM AL-TIRMIDHI

Nodir Karimov Rakhmonkulovich\*

\*PhD student,  
Tashkent State Institute of Oriental Studies,  
UZBEKISTAN.  
Email id: nodir-karimov@list.ru

### ABSTRACT:

*Egyptian scholars were the first people who paid a special attention to explain al-Tirmidhi's books. Al-Geyoushi Muhammad Ibraheem is one of researchers who studied and analyzed al-Tirmidhi's thoughts in Egypt. Five books of his appeared in the world because of Geyoushi's effort and plenty of articles were published by him. This research intends to analyze works of Al-Geyoushi and make a clear idea about his contribution on studying his sources. It will be an attempt to analyze and compare his articles. The qualitative study used the literature review framework and obtained research data through document analysis. In general, Hakim Tirmidhi's scientific legacy can be proven as the most vital sources to learn and explain Sufism in Egypt.*

**KEYWORDS:** *Tirmiz, Al-Hakim, Sainthood, Gnoseology, Awliya, hukama (Sages), Ulama (Scholars), Saints, Tariqah, Ibn Taymyya, Ibn Arabi.*

## 1. INTRODUCTION

Asian scholar Hakim Tirmidhi played an important role in the development of religious and secular sciences in the medieval world. His full name is Abu Abdullah Muhammad bin Ali bin Hasan bin Bashir (in some sources it is Bishr) Al Hakim At-Termizi. He was born in approximately 132-142/750-760 years and died in 255/869 in Tirmiz – an ancient city in Uzbekistan. Hakim Tirmidhi remained invaluable scientific heritage. The list of his books, thesis and papers counts more than 150-400 pieces. The total amount of Hakim Tirmidhi's works makes eighty volumes which kept in the form of manuscripts, published books related him in the libraries of the world [12, p.15]. The range of Tirmidhi's education did include the sciences, such as Greek natural science and philosophy. His subsequent reference to learning the use of the astrolabe, implying knowledge of astronomy and mathematics, has been given different interpretations. "There is no trace of influence from "natural science" in his writings." But being a Sufi Master is enough to accept that he did. However, his general pursuit of knowledge gained him the name of "*al-hakim*" (the title which means he had mastered the five sciences-Mathematics-Logic-Music-Medicine and Astronomy). As above mentioned facts, his scientific works have been studying in all over the world as reliable sources as well as in Egypt. In this article, it will be an attempt to analyze the works of Al-Geyoushi which were published in different periods and in various parts of world. It will be clear that how and which parts of Tirmidhi's books were studied by him.

## 2. LITERATURE REVIEW

In this research, "The life and works of Hakim al-Tirmidhi" by Hasan Qasim Murad, "Notes on a Tirmidhi's manuscript" by Arthur John Arberry, "Al-Tirmidhi, his works and his opinions on Sufism", "Al-Hakim al-Tirmidhi: his works and thoughts", "Al-Tirmidhi's Theory of Saints and Sainthood", "Al-Tirmidhi's conception of the areas of interiority", "Al-Tirmidhi's Conception of the Struggle Between Qalb and Nafs", "The Influence of al-Tirmidhi on Sufi Thought" by Al-Geyoushi Muhammad Ibraheem, "Bayan al-farq bayn al-sadr wa-l-qalb wa-l-fu'ad wa-l-lubb" by Nicholas Heer are used as main sources.

## 3. RESEARCH METHODOLOGY

This is a qualitative research using the content analysis approach. More than ten scientific works of Al-Geyoushi are chosen to analyze how he studied and what kind of discoveries he created while learning Hakim al-Tirmidhi. Besides that, the author had used journals and articles to collect data related to the research.

## 4. FINDINGS AND DISCUSSION

Often described as Islamic mysticism, Sufism emphasises the inner search for God and the renunciation of worldly matters. Throughout the centuries, Egypt was a place of Sufi mystics [17]. In Egypt there are 74 Sufi orders (tarikas), each headed by its own sheikh. Overseeing them is the Supreme Council for Sufi Orders and the president of Egypt is directly in charge of Sufi affairs.

The devotions of many Sufi orders center on various forms of the dhikr a ceremony at which music, body movements, and chants induce a state of ecstatic trance in the disciples. Since the early 1970s, there has been a revival of interest in Sufism [16]. Egyptian scholars have been studying the history of Sufism, the books and lives of Sufi sheikhs. Some Egyptian researchers consider Hakim Tirmidhi as a Sufi sheikh. But most of them think he was not. Ja'far b.



Muhammad al-Khuldi (d.348 A.H.), one of the most eminent and oldest of Junayd's (d.298 A.H.) pupils and one of the earliest, very well known biographer of the Muslim saints, is reported to have said, "I have with me more than 130 works (diwan) of the Sufis". When asked, "have you any of the books of Muhammad b. Ali al-Tirmidhi", he replied, "no, I do not count him among the Sufis". This remark on Tirmidhi by a brother Sufi is rather significant. It may be taken as an expression of dislike on the part of an orthodox and cautious Iraqi Sufi towards the mystical views of a Khurasani Sufi and may thus signify their unorthodoxy and extravagance. Or al-Khuldi's statement may mean that to him al-Tirmidhi was also something other or more than a Sufi; and that something other or more was so substantially important that it overshadowed al-Tirmidhi's mystic side and prompted al-Khuldi to exclude him from the ranks of the Sufis. Be that as it may, the fact is that al-Tirmidhi's intellectual personality is too complex and too versatile to be put under any simple jurist, historian, mystic and perhaps, even a physician. On top of that he was also a prolific writer, and a very lucky one at that, since most of his writings not only gained popularity during his own life-time but have survived even to this day. Nevertheless al-Tirmidhi is primarily and essentially a mystic and is so regarded by later medieval Muslim writer as also by modern scholars of Islam. According to al-Hujwiri (d. between 465-469 A.H.) he was the founder of a Sufi school known as al-Hakimiya and was the first to apply the doctrine of *wilaya* to the theory of Sufism [9,p.65-77] in which, according to Massignon, he is the true precursor of Ibn Arabi (d.638 A.H.) who three centuries later studied him closely and admired him [10,p.192].

The work and studies of al-Tirmidhi were not known in Egypt until Abdulmuhsin al-Husaini published "Riyazatu-n-nafs" in Alexandria in 1942. In 1947, English scholar Arthur Aberry and Egyptian scientist Abdulqodir published that book second time with explanations. This book is a precise source which reviews the issues of human study and spiritual path (Tariqah). Tirmidhi himself calls this book a teaching guide in his other works. In terms of issues of human studies and mystical path, "Riyazatu-n-nafs" is Tirmidhi's most complete and clear book about the structure of human body and all essence, parts and intellectual facilities [7,p.315-327]. And that year (1947), Aberry and Abdulqodir printed Tirmidhi's second book called "Adabu-n-Nafs". This book is about a set of questions about Gnosticism and particularly about the meaning of the truth.

It can be seen that from fifties of XX centuries, studying and interpreting of Tirmidhi's heritage was common among Egyptian scholars. Muhammad Ibrahim al-Geyoushi was one of them who devoted a range of works to Hakim Tirmidhi.

In October 1964, Abd al-Halim Mahmud first drew Muhammad Ibrahim al-Geyoushi's attention to the importance of three works by al-Tirmidhi, "Bayan al-Farq", "al-Riyadah" and "Adab al-Nafs". After reading these books He found himself so intrigued by al-Tirmidhi that before long He was completely absorbed in the quest for Tirmidhi's remaining works, many of which are still in MS. 1966 Dr. Walid Arafat started supervising him. In 1970, He defended his PhD dissertation called "Al-Tirmidhi, his works and his opinions on Sufism" in SOAS in London [1, p.468.]. His thesis deals with the life and works of al-Hakim al-Tirmidhi, and his fundamental importance for the development of Sufism. It is divided into eight chapters, preceded by an introduction containing a survey of previous biographical and critical attempts. Chapter I discuss his cultural background and his relationships with his teachers and students, and endeavours to reconstruct the history of his life from such scant biographical data as are available. Special consideration is given to his formative years and the persecution he suffered.

Chapter II is divided to his works in the discussion of which the following procedure was observed throughout. First, reference was made to the libraries and collections which contain his extant works; secondly, a list of all his works, available or lost, published or unpublished, was provided; thirdly, each extant work was reviewed, stressing the most salient points in its contents.

Chapter III deals with his approach to Tafsir, Hadith, Ilm al-Kalam and Fiqh.

Chapter IV concerns his theory of saints and sainthood. His characteristic division of saints, the intricate hierarchy and the ten qualities of sainthood form the basis on which he discusses the saint's awareness of his sainthood and his ability to see the hidden, foresee the future and work miracles. This is followed by the analysis of the relationship between sainthood and prophethood, and al-Tirmidhi's own share of sainthood. The chapter ends with a discussion of the acceptance or rejection of al-Tirmidhi's theory by Ibn Taymyya and Ibn Arabi.

Chapter V entirely devoted to al-Tirmidhi's ideas on gnosis, begins with the elucidation of the connection between light and gnosis. Much space is accorded to al-Tirmidhi's disquisition on exoteric and esoteric knowledge, their respective aims and categories and the behaviours conducive to their achievement. Finally, his ideas are compared with those of other Sufis by means of quotations from *Kashf al-Mahjub* and *Ilm al-Qulub*. Chapter VI, on the areas of interiority, describes the localities of the interior of the human body, made to represent the stations of faith. Each of them is portrayed as a mountain with its own bird, symbolic of one aspect of the soul, and with its own light. The brightest of these is the light of unity. It is equated with the secret of life which generates all its forms.

Chapter VII depicts the struggle between the heart and the soul, and advises on exemplary Muslim conduct. Chapter VIII inquires into al-Tirmidhi's influence on contemporary and later Sufi thought as observable in al-Malamatiyya and al-Hakimiyya, and traceable in the work of al-Ghazali, Ibn Arabi and Ibn al-Qayyim. It further quotes the opinions of Muslim biographers on al-Tirmidhi's role in the development of Islamic thought, giving special attention to his salient characteristics and methodological approach. To sum up, it can be said that the dissertation of al-Geyoushi is written clearly and explained all the points of Tirmidhi in detail.

Let's analyze al-Geyoushi's articles on Hakim al-Tirmidhi in detail. In 1970, Al-Hakim al-Tirmidhi: his works and thoughts by al-Geyoushi was published in "The Islamic quarterly"[3,p.159-201]. As it is known that he was the first to clarify and formulate certain ideas on Sufism and saints and sainthood, to which his successors subscribed and on which they relied. This raises many questions as to the reasons why this prominent Sufi scholar was not fully recognized. These reasons were explained in the course of the discussion of his life and his works in this article. At the beginning of his article, he gave information on the researchers who and how studied al-Hakim al-Tirmidhi and his heritages. In the following pages, he spoke about his life, his early studies, family influences, Pilgrimage and early journeys, his spiritual progress and finally, his journey to Balkh and Nishapur.

In 1971, Al-Tirmidhi's theory of saints and sainthood by Al-Geyoushi was published in "Islamic Quarterly". In this article, he made an attempt to present all the meaning of saint and sainthood. At the beginning of article, it is given firstly those two terms (saint and sainthood) in Arabic and also their use in the Qur'an. "The words *wali and wilayah*" were in existence and in use before Islam, and before the revelation of the Qur'an. The verb *waliya* means "to be next to" or "to follow immediately after". Hence the pre-Islamic meaning of the word *wali* is "helper",

“beloved”, “relative”, as being next to one, terms in all of which the element of close proximity or close connection is predominant and the idea of being by one’s side or next to one is always present. In the Qur’an, the word *wali* occurs forty-six times and *awliya* forty-two. *Wali* is used several times attributively to express a quality of God in the sense of “protector and supporter of those who believe” – al-Geyoushi says in his article [5, p.17-61]. Al-Tirmidhi was himself a saint in his time. Al-Tirmidhi did not talk expressly on his position of sainthood. But we could infer from his writings that he had reached the culmination normally attainable by saints in successive periods, that is to say the ranks which recur with the passage of time, but not including the Seal. We may also understand from what he said that he achieved all the ranks of Sainthood except the Seal which was the subject of a book called “Khatm al-Awliya”. There he says that “Time will not elapse until God sends forth the Seal of Saints”. This gives us to understand that he did not claim for himself to the exclusive title of the Seal of Saints [1, p.250-251]. So, al-Geyoushi made an attempt to show Tirmidhi’s position in saints and sainthood. Later special thesis was written to analyze saints and sainthood. It means that al-Geyoushi gave an idea to learn deeper that problem. He showed Tirmidhi had clear and unrepeatable thoughts [1].

In 1972, an article called “Al-Tirmidhi’s conception of the areas of interiority” by al- Geyoushi was announced in “The Islamic quarterly”[4,p.168]. As the author mentioned, “for Tirmidhi the word *qalb* is a comprehensive term which subsumes all the degrees of interiority. In the interior, there are areas inside and outside the heart. The application of the term “heart” to all these areas is similar to that of the term “*ayn*”, which covers all that lies between the margins of the eyelids, consisting of the black and white of the eye, the eyeball, the vitreous humour, and the light in the ball” [8,p.33]. Every one of these things has its own separate identity, and a significance different from any other. But some of them are subordinate and auxiliary to the others, and some have uses related to those of others, with anything outside serving as a background to whatever lies next to it within, while the light in its substance is maintained by the substances of all others constituent parts [4, p.168]. As it is known in “Bayan al-farq bayn al-sadr wa-l-qalb wa-l-fu’ad wa-l-lubb”, al-Tirmidhi divides the internal areas into four parts: breast, heart, sense and intellect. The author gives full information on four stations of heart.

In 1974, al- Geyoushi published an article on “Al-Tirmidhi’s conception of the struggle between Qalb and Nafs” in “Islamic Quarterly”[2,p.3-14]. The author says: “Any student of the thoughts and ideas of al-Hakim al-Tirmidhi will find it obvious that he believes man to be the sphere of constant struggle between the forces of good and evil, and these forces to occupy certain areas of influence in the human being whence they exercise their authority, practice their assaults, engage auxiliaries, and prepare for the onslaught. Each of the two forces has an overlord, a realm, and collaborators or auxiliaries. The realm of good, or light, has gnosis for overlord and has reason for the prince and heir to the throne, assisted by a hundred auxiliaries, each one of whom has a definite assignment and a clear-cut function. The domain and the seat of this realm are in the heart, which is the spring or the source of light, resplendence, and right guidance”.

Al-Tirmidhi’s picture of this strife between gnosis and reason on the one hand and the lower-soul and passion on the other, along the lines we have just detailed, and as clearly shown in the numerous writings of al-Tirmidhi generally, especially where he talks about the soul and its wiles and cunning used to lead astray people going along the right path, eager to draw very close to God and to be exposed the emanations of this divine light – (the picture based on the promise that the heart is the seat or metropolis of the realm where inside and outside, there are seven

cities of light, and there are also the soul, the organs and the villages all round) – we would like to say that this picture is the foundation line followed by al-Ghazali in his book “The Alchemy of Happiness” – where he talks about the soul and its energies and how it is divided into external and internal, with the organs around it, like al-Tirmidhi’s villages, except that al-Ghazali called the organs “estates” – “diya” – instead of the “villages” – “qura” – which is only a variation in name. The influence of al-Tirmidhi is also visible in al-Ghazali’s discourse on the heart and its soldiers in the same book.

In 1978, Al-Geyoushi Muhammad Ibraheem published the article called “The Influence of al-Tirmidhi on Sufi Thought” in “Islamic quarterly” [6, p.104-115]. Al-Geyoushi says: “Al-Tirmidhi had a clear concept of the nature of the spiritual progress attainable by the true believer, who then becomes a living example to the people. This high advancement is achieved under the following conditions: when such a person reaches the rank of sainthood (a theme to which al-Tirmidhi devoted a considerable proportion of his books and treatises, in which he explained its properties, grades and sources, and the shares of enlightenment and wisdom enjoyed by the holder of this rank through divine grace); by the attainment of an exalted grade of gnosis, the acme of human perfection, accessible to such of God’s servants as are endowed with His grace, with divine knowledge and with the ability to comprehend Him; by the achievement of perfect control over one’s inclinations and passions through a struggle in which reason overcomes passion; and by disciplined conduct, which he illustrates by many examples of those qualities of nobility and honour which make a human life the very embodiment of virtue and peace”. At the same times, Al-Tirmidhi influenced greatly on the Sufi thoughts. Al-Geyoushi explained the effect of al-Tirmidhi on the Malamatiyyah sect of Sufism, and also on the Hakimiyah sect which copied, as its own principles on Sainthood, the ideas of al-Tirmidhi in that respect, and those of al-Ghazali, Ibn Arabi and Ibn al-Qayyim are also studied in so far as al-Tirmidhi influenced their Sufi systems.

## 5. CONCLUDING REMARKS

In conclusion, as it was mentioned above Sufism plays an important role in the social and political life of Egypt. Hakim al-Tirmidhi is also well-known as Sunni jurist (*faqih*), traditionist (*muhaddith*) and Sufi master in the Egypt. When discussing the problems associated with Sufism, Hakim Tirmidhi had written various opinions that have been argued upon by numerous researchers while elaborating on their various thoughts over time until this present day. These various opinions and views found in the heritages of Hakim Tirmidhi were compiled to discuss the problems associated with “sainthood”, “gnoseology”, “awliya”, “*hukama*” (sages), “*ulama*” (scholars), *aql* (intellect), “*Hikmah*”, “*qalb*” (heart), “*Stations of the Heart*” and etc.

Al-Geyoushi Muhammad Ibraheem is one of researchers who studied and analyzed al-Tirmidhi’s thoughts in Egypt. He played a vital role in studying Tirmidhi’s works. About five books of his appeared in the world because of Geyoushi’s effort such as “*Sharhu qavlihi ma-l-imanu va-l-islamu va-l-ihsan* (1960)”, “*Ma’rifatu-l-asrar*”(1977). The whole book consists of 95 pages in two parts. The Knowledge of Secrets stresses that the status of prophets is higher than the status of saints (it is stated in detail in part of opinion, judgments), “*al-Masailu-l-maknuna*”(1980) (It is a collection of thesis about law, interpretation, hadith and mysticism), “*Manazilu-l-ibad*” (1977). In 1977 year, Muhammad Ibraheem al-Geyoushi discovered the book called “*Manazilu-l-ibad*”. This book is also known as “*Manazilu-l-ibadva-l-ibadat*” and “*Manazilu-l-qasidin ila-l-Lah*”. This is a short book about seven stations of Sufis tariqahs (paths) or stations of journeys.

Egyptian scholar al-Geyoushi spent more than 20 years on studying Hakim Tirmizi's heritage. During this period, he wrote a range of articles on Tirmizi's works, namely "الترمزي في التفسير" (the method of Hakim Tirmizi in tafsir- K.N.) [13,p.888-912], "الترمزي في عالم الكلام" (the method of Hakim Tirmizi in the world of speech - K.N.) [14, p.1473-1484], "والفقه" (the method of Hakim Tirmizi in hadith and fiqh- K.N.) [15,p.1069-1074], Tirmizi's concept of *Wilay* [5,p.17-61], his influence on Sufi thought [2,p.13-14], his concept of the struggle of *qalb* and *Nafs* [2,p.3-14], a summary of Tirmizi's map of the heart [2,p.3-14] and other studies. Later the ideas which he discussed in his works were studied as special researches in the different parts of world.

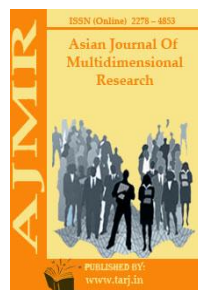
## REFERENCES

1. Al-Geyoushi I.M. Al-Tirmidhi, his works and his opinions on Sufism.// University of London School of Oriental and African Studies. PhD diss.1970. – P.468.
2. Al-Geyoushi Muhammad Ibraheem//Al-Tirmidhi's Conception of the Struggle between Qalb and Nafs. "Islamic Quarterly" XVIII no. 3&4.1974. – Pp.3-14.
3. Al-Geyoushi Muhammad Ibraheem//Al-Hakim al-Tirmidhi: his works and thoughts. "Islamic Quarterly" XIV no. 4&4.1970. – Pp.159-201.
4. Al-Geyoushi Muhammad Ibraheem//Al-Tirmidhi's conception of the areas of interiority. XVI no. 3&4.1972. – Pp.168.
5. Al-Geyoushi Muhammad Ibraheem//Al-Tirmidhi's Theory of Saints and Sainthood. "Islamic Quarterly" XV no. 1. 1971. – Pp.17-61.
6. Al-Geyoushi Muhammad Ibraheem //The Influence of al-Tirmidhi on Sufi Thought. "Islamic quarterly" XX no. 3. 1978. – Pp.104-115.
7. Arthur John Arberry: "Notes on a Tirmidhi's manuscript" in Rivista degli Studi Orientali 18 (1940) 315-327.
8. Bayan al-farq bayn al-sadr wa-l-qalb wa-l-fu'ad wa-l-lubb, ed.Nicholas Heer (Cairo, 1958), - P.33.
9. Hasan Qasim Murad. The life and works of Hakim al-Tirmidhi//Hamdard Islamicus. Pakistan. Vol.II No.1. 1979. – P.65-77.
10. Louis Massignon. Essay on the Origins of the Technical Language of Islamic Mysticism. Translated from the French with an introduction by Benjamin Clark. University of Notre Dame Press, Indiana. 1997. – P.192.
11. Palmer A. The Social and Theoretical Dimensions of Sainthood in Early Islam: Al-Tirmidhi's Gnoseology and the Foundations of Sūfī Social Praxis, Doctor of Philosophy (Near Eastern Studies). The University of Michigan. 2015.
12. Историко-культурные традиции эпохи Хакима Тирмизи и ее значение в мировой цивилизации (на рус., англ. яз.). - Душанбе, 2016. Издательство: «Дониш». – с. 588. (Historical and cultural traditions of the Hakim Tirmizi's Epoch and its importance in the World Civilization (in the Russian and English languages). - Dushanbe, 2016 - p. 588).
13. "مجلة الأزهر". القاهرة. منهج الحكيم الترمزي في التفسير // الدكتور محمد ابراهيم الجيوشي. 1981.53/5.888-912.



14. "مجلة الأزهر". 1981. 53/8.1473-1484. القاهرة. منهج الحكيم الترمزى في عالم الكلام // الدكتور محمد ابراهيم الجيوشى.
15. "مجلة الأزهر". القاهرة. منهج الحكيم الترمزى في الحديث والفقہ // الدكتور محمد ابراهيم الجيوشى. 1981.53/6.1069-1074.
16. [https://en.wikipedia.org/wiki/Islam\\_in\\_Egypt](https://en.wikipedia.org/wiki/Islam_in_Egypt)
17. <https://www.bbc.com/news/world-middle-east-42154626>





## THE ROLE OF RURAL TOURISM IN THE DEVELOPMENT OF ECOTOURISM

A.M. Mahmudova\*

\* Assistant of the department,  
"International tourism and tourism service",  
UZBEKISTAN.

### ABSTRACT:

*This article examines the ways and means of using rural tourism for the development of ecotourism in Uzbekistan. Moreover, paper investigates major points of the development in the field. It concludes major points while showing better developments in the review. In Uzbekistan agriculture is an important sector for enhancing living standards and achieving economic growth because a) it constitutes 38 per cent of the country's GDP and b) 60 per cent of the population relies on agriculture for sustenance. Moreover, the farm rural tourism services (horsing, biking, etc.) provided by the farmers may attract rural tourists. This specialization within the dual agriculture was to a large extent the result of a conscious government strategy, because in many countries cotton is grown by smallholders without sophisticated machinery. Starting with opportunities, these are mainly linked to Presidential decrees related to Agriculture, notably "On Further development of farms and dehkans, and on State support of entrepreneurs of the Republic" and others that encourage growth in the agriculture sector.*

**KEYWORDS:** *Ecotourism, Rural Tourism, Natural Resources, Cultural Resources, Labor Resources.*

## INTRODUCTION

These days it is very important that Uzbekistan pay great attention to the development of tourism, which is a policy of the state. The meaning of this important policy is that many decisions and decisions of the President of the Republic of Uzbekistan Sh.M.Mirziyoev and the Cabinet of Ministers of the Republic of Uzbekistan, aimed at its development and improvement in recent years, and in the regions have been adopted.

These decisions are an example of the Decree of the President of the Republic of Uzbekistan dated March 29, 2018 "On the Program of the Obod Village" No. UP-5386. In order to radically upgrade the architectural appearance of rural settlements, to create roads, engineering and communication infrastructure and social facilities, and on this basis to enhance the living culture and outlook of the population, from April 1 this year, in every district and city of the country, first and foremost, climate change, and in the coming years, in three districts (mahallas), in the heavily clustered regions, in 2018, there will be a significant improvement in the living standards of the population, the "Obod Kush" program, aimed at ensuring the provision of food, modernization of the village (mahalla), and creation of jobs for the residents.

Even if agritourism is diffused worldwide, the Italian case is a crucial and successful example, having a positive economic and social impact on rural areas (Esposti 2006 and 2012). Two factors play a key role in strengthening the farm rural tourism growth in Italy: the richness and the diversity of the traditional food production and of the Italian cuisine and the diverse historical and environmental elements that characterize the Italian rural landscapes, attracting people from other regions and from abroad. On one hand, the most visited rural places in Italy are food-driven (olive oil, wine, cheese, traditional local vegetables producing farms). Thanks to this type of tourism, people are able to know the terroir (historical area of production and tradition-based know how) where traditional food are produced and to taste (and buy) them in the area of production. On the other hand, in other rural areas the agritourism activity is based on the richness of their landscape, environmental and/or historical elements. It should be noted that, thanks to farm recreational services provision, many Italian farmers improve their income, new job are created for the family-farm members and young people are attracted by farming activities (Broccardo et al., 2017). Additionally, the effective organization of agritourism activities in the Italian rural areas is an environmentally friendly and accessible tool for nature conservation and for the provision of public services (Flanigan et al., 2015; Lupi et al. 2017; ISMEA, 2017). However, the Italian experience shows that agritourism activity is an effective rural development tool only when the tourism supply is tailored on the rural area specific features (Lupi et al., 2017) and is based on a farms' effective marketing strategies (ISMEA, 2012).

Since the break-up of the Soviet Union, the Government of Uzbekistan is following a gradual approach towards market-oriented reforms. In Uzbekistan agriculture is an important sector for enhancing living standards and achieving economic growth because a) it constitutes 38 per cent of the country's GDP and b) 60 per cent of the population relies on agriculture for sustenance. Agriculture has the potential to provide regular income, employment and food supply. Further focusing the agricultural sector, there are different challenges to overcome but also current opportunities. Starting with opportunities, these are mainly linked to Presidential decrees related to Agriculture, notably "On Further development of farms and dehkans, and on State support of entrepreneurs of the Republic" and others that encourage growth in the agriculture sector. Moreover, the main objective of Uzbekistan's Welfare Strategy is to accelerate growth through a modernized and competitive agricultural industry.

## THEORETICAL BACKGROUND

Agritourism generally considered a component of rural tourism: while in the latter, the tourism and recreational services provided by a wide range of companies (hotels, restaurants, etc.) agritourism activities carried out exclusively by farmers. Despite its simple definition, agritourism is a “complex and vastly differentiated phenomenon whose socio-economic and landscape impacts depends on the characteristics of each individual territory” where tourists have holiday and recreation (Lupi et al. 2017). Agritourism is based on the landscape, tradition and family based farming from which may emerge a complete competitive tourism product. This is in line with (Dončić et al. 2006), who identifies the basic factors characterising a tourism destination: local attractions, their homogeneity or heterogeneity, the number of visitors and the level of development of tourism destinations. In the agritourism business case, during their staying tourists have the opportunity to enjoy landscape, rural amenities and rural lifestyle, to get acquainted with local life traditions and to engage with local people in traditional farming activities. In some cases, tourists may have a chance to work and rest at a time, so tourist may be busy with rural activities some period of the day. This allows tourists to enjoy an environmentally friendly environment in rural areas and to face other traditions and cultures. Moreover, the farm rural tourism services (horsing, biking, etc.) provided by the farmers may attract rural tourists. Agriculture in Uzbekistan, as in all other Soviet republics, was traditionally organized in a dual system, in which large-scale collective and state farms coexisted in a symbiotic relationship with quasi-private individual farming on subsidiary household plots. The large-scale farms were the backbone of commercial agriculture, feeding agricultural products into the state-controlled distribution system. Yet the subsidiary household plots produced much in excess of their subsistence needs, and typically sold their surplus products to the local large-scale farm, to the state-controlled consumer coop network, and partly also in nearby towns, where the bazaar was a well-established traditional institution. While cultivating only 3% of arable land, the household plots consistently accounted for 20%-25% of gross agricultural product in Uzbekistan during the last decades of the Soviet era, a much higher proportion than their share of land. This was accomplished mainly by concentration in livestock production. Since 1970, the households in Uzbekistan had more cattle in absolute numbers than the collective and state farms combined. In addition to livestock production, the small household plots specialized in labor intensive horticulture, producing 30% of the total output of potatoes, 45% of vegetables, and 60% of fruits and berries during the decade 1980-1989. Scale crops requiring purchased inputs and mechanization, such as cotton and grain, were grown mainly by collective and state farms. Thus, up to 1990, household plots produced about 5% of grain (mainly as feed for their animals) and no cotton. This specialization within the dual agriculture was to a large extent the result of a conscious government strategy, because in many countries cotton is grown by smallholders without sophisticated machinery. The emphasis on large-scale cotton fields and mechanical picking (57% of all cotton in 1990 was picked by machines) was an outcome of Soviet ideology for industrialization of agriculture.

The crucial importance of this resolution in the socio-economic life of the country is that the measures, guidelines and guidelines set out in the Decree will not only affect the regulation of tourism services. Now, when considering the importance of rural tourism in the development of ecotourism in our country and the importance of these services in the socio-economic life of the country's population, it is necessary to pay attention to the sources of tourism services that arise in the development of rural tourism in our villages.

For eight months, the sun gives great light, and tourists can enjoy this generosity of our nature. Villas, house wares, animals, children's homes, oasis, aryks and yards built for cooling purposes should serve to popularize rural tourism.

It's obvious that our foreign tourists are not the most expensive luxury hotel in our country, but the ones built in Uzbek, national style, and we have to offer that. Because they live in houses built in European style, and our national rooms, on the one hand, are costly in the construction, but also nationality.

National couches, beds, beds, and so on, make tourists laugh at them, making them more attractive. Tourist programs during the holidays of tourists are one of the tools of company-style touristic service. In particular, walking on camels, taking tourists to a camel or a horse are also important services in rural tourism. The routes that are of great importance to the active leisure on the way can also enhance the company style of tourist services.

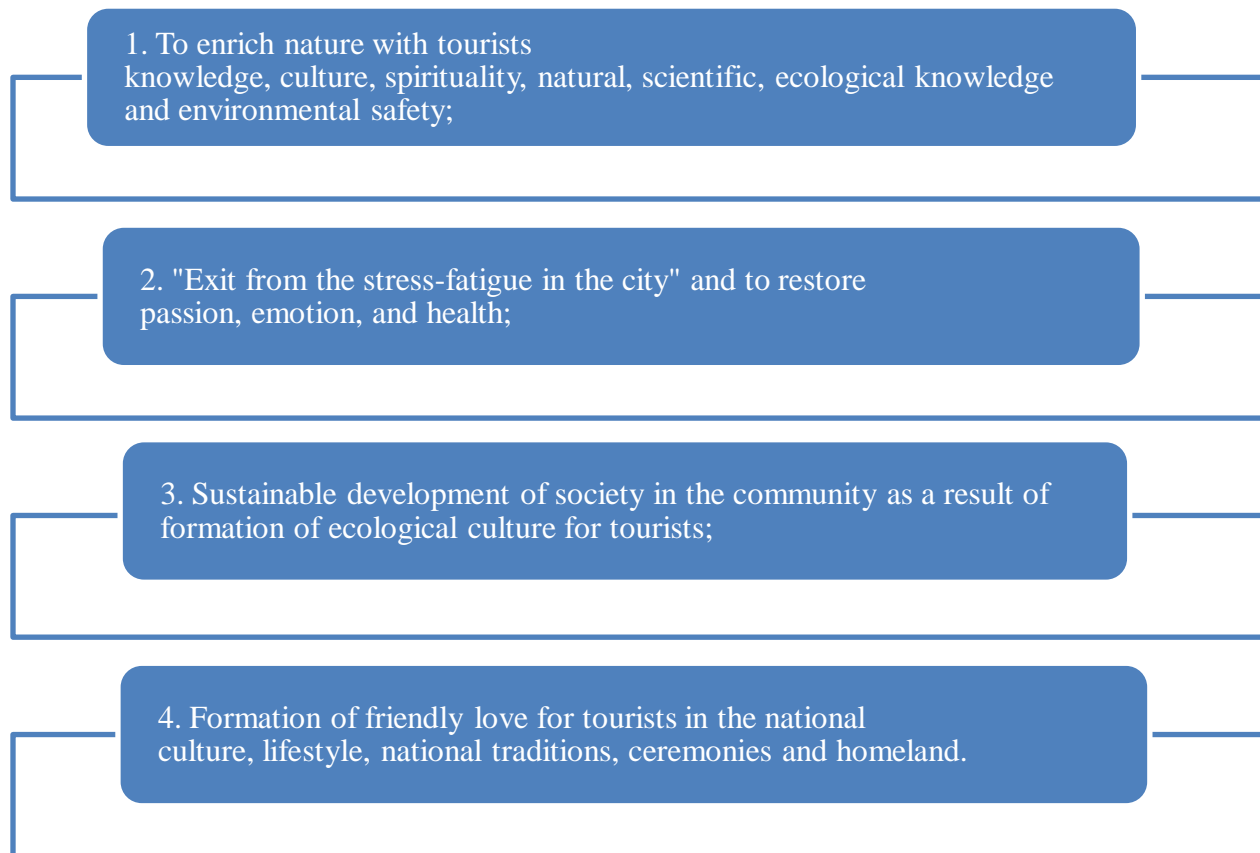
## **DISCUSSIONS**

One of the innovations of the company style of tourism is the participation in the national cooking process. It is also recommended to try Uzbek pilaf, spaghetti, mastava, kebab and soms, as well as to taste a delicious meal.

High-skilled cooking, cooking tradition is not only a source of familiarization of tourists with historical values, but also a great benefit. It is possible to sell books about cooking, take pictures around the boiler, and be the direct participants of the tradition of Uzbek hospitality around the table.

In the development of rural tourism, first of all, because our villages are located in different natural climatic conditions, we must pay close attention to the development of ecological tourism in the development of tourist services.

Therefore, it is appropriate to determine the significance of ecotourism in the socio-economic life of our country's population. That is, the role of ecotourism in social life in the development of rural tourism is explained below.

**Graph 1. The role of ecotourism in social life of Uzbekistan**

The State Program "Rural Development and Prosperity" - entered into force in 2009 - stimulated both the scholars' debate and the operational implementing policy proposals aiming at promoting a sustainable rural development in Uzbekistan. The State program is characterised by a comprehensive approach to rural development, which includes a wide range of measures. On one hand, the programme includes investments aiming at improving the infrastructure of rural areas, e.g. developed provision of electricity, public services, water and natural gas supply.

On the other hand, the program focuses on both the development of agriculture (including training and skills development of farmers), and the growth of entrepreneurship in rural areas based on diversification of farming activities, through the provision of rural-tourism services. Sustainable rural development, effective use of existing domestic resources, rich natural and economic potential in the process of socio-economic reforms implemented in Uzbekistan are the actual key issues of the government policy. The huge amount of population living in rural areas (almost 50%) and the leading contribution of agriculture to the country's GDP (17%) show that the effective use of the socio-economic potential of rural areas is a priority task of sustainable rural development in Uzbekistan (UZSTAT, 2016).

When determining the development of rural tourism in the socio-economic life of the country, it is crucial that, based on the great principles of ecological tourism, the ecotourism funds are of great importance for nature conservation, biodiversity and biodiversity conservation. Therefore, the role of rural tourism in the socio-economic life can be determined as follows.

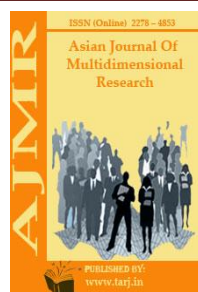
These trends add to the social norms of ecotourism and prove that the development of rural tourism will be a promising direction in the socio-economic life of the country:

1. Ecotourism provides and maintains additional jobs for local workers;
2. Involves new technologies in the use of nature and natural resources;
3. Forest tourism stimulates the production of ecologically clean food products;
4. Rural tourism promotes new investments into the conservation of natural resources (information) and improves the service of ecotourism zones;
5. Increases the socio-economic level of the local population at the facilities of the villages;
6. Creating theoretical and practical basis for ecotourism and ecotourism culture in the field of ecotourism and nature conservation education;
7. Forest tourism promotes and develops a wide range of local production products - craftsmanship;
8. Forest tourism promotes the development of local nature conservation and stimulates on spiritual and material aspects;
9. Forest tourism creates international friendly relations among peoples.



**REFERENCE:**

1. Broccardo L., Colasso F., Truant E. (2017). Unlocking value creation using agritourism business model, *Sustainability*, 9, 1618, pp.1-26.
2. Decree of the President of the Republic of Uzbekistan "On additional measures for accelerated development of the sphere of services in rural areas for 2013-2016", 2013, pp.2-3.
3. Esposti R. (2006) *Agriturismo al bivio? Agriregionieuropa*, 5, pp. 28-30.
4. Esposti R. (2012) Knowledge, technology and innovations for a bio-based economy: lessons from the past, challenges for the future, *Bio-based applied economics*, 1 (3), pp. 231-264.
5. Flanigan S., Blackstock K., Hunter C. (2015). Generating public and private benefits through understanding what drives different types of agritourism, *Journal of rural studies*, 41, pp. 129-141.
6. Galluzzo N. (2017) the impact of the common agricultural policy on the agritourism growth in Italy, *Bulgarian Journal of agricultural science*, 23 (5), pp. 698-703.
7. HajdašDončić, S., Štefanec, P.(2006): *Agroturizam*, Matis, Pregrada
8. ISMEA, *Strategie di marketing per l'azienda agrituristica: Linee guida*, 2012, Roma
9. ISMEA, *Agriturismo e multifunzionalità dell'azienda Agricola*, 2016, Roma.
10. ISMEA, *Multifunzionalità Agricola e Agriturismo Scenario e Prospettive*, Rapporto 2017, Roma
11. Ibodullayev.N. (2008). *Uzbekistan's touristic resources*. Samarkand. pp 65-66.
12. Lupi C., Giacco V., Mastronardi L., Giannelli A. (2017). Exploring the features of agritourism and its contribution to
13. *Rural development in Italy, Land use policy*, 64, pp. 383-390.
14. Potocnik-Slavic I., Schmits S. (2013). Farm tourism across Europe, *European countryside*, 4, pp. 265-274.
15. The Law of the Republic of Uzbekistan "On Tourism". New laws of Uzbekistan. Tashkent. Justice 2000
16. To the President of the Republic of Uzbekistan Sh.M. Mirziyoev's Decree "On Measures to Ensure Rapid Development of the Tourism Industry of the Republic of Uzbekistan" # PF-4861.
17. The Decree of the President of the Republic of Uzbekistan dated March 29, 2018 "On the Program of Obod Kala" of the President of the Republic of Uzbekistan No. UP-5386
18. Rustamov.R.M. (2007). Problems formation of sustainable development of Agriculture sector. №2 (24), pp 152-154.
19. RRN – ISMEA elaborations on STAT data (2017) 2SCRepUzEEP. Concept of Ecological Tourism Development in Uzbekistan, 2007, Tashkent.



## HISTORICAL AND RELIGIOUS MONUMENT OF MUHAMMAD SHARIF (MEVLANAGREKUSHOH)

**Ozodbek Nematov\***

\*A 2nd year student of the History,  
Faculty of the Uzbekistan National University,  
UZBEKISTAN.

### ABSTRACT

*This paper investigates major points of the Historical and religious monument of Muhammad Sharif (MevlanaGrekushoh). This ancient monument and hero investigates deeply in theoretical basis. Hence, value of Muhammad Sharif on today'syoungsters' life was investigated from different points. The level of his students was obvious to the teacher. They said, "O Muhammad, are you?" "The Lord is open to all," he replied. He said, 'Do not leave the oven empty.' In addition, fish cannot be eaten. There is information in the local population about the death of two Soviet soldiers who have eaten these fishes during the Soviet era. There is such information among the local people, that with the advent of this Great War, the wars here and the various problems will be eliminated. From generation to generation, he is one of the descendants of Muhammad (peace be upon him). They said, "O Muhammad, are you?" "The Lord is open to all," he replied. He said, 'Do not leave the oven empty.' They threw it into a dishwasher and closed its mouth.*

**KEYWORDS:** History, Uzbekistan, Monument, Muhammad Sharif, Mevlana Grekushoh

## INTRODUCTION

As it is known that there are a lot of ancient and mysterious places in our country with a unique history. One of the most visited places of worship is the Mevlana Grekushoh sacred place located in Garasha village, Forish district of Jizzak Province. In the village of Garasha in the Forish district, there are two pilgrimage sites, named after Muhammad Sharif (MevlanaGrekushoh). The first one is the guesthouse of the blessed one, and the second one is "Jondahar Ata" ("comforter of soul")(Hamidov, Thiel, & Zikos, 2015; Moje, Quarterly, & 2009, n.d.).

Unfortunately, there is very little information about Muhammad Sharif (Mevlana Grekushoh), who is the reason for the occurrence of this holy place. Muhammad Sharif bin Ali AsqarHoja Ahmad Yassaviy, a renowned author of Mevlana Grekushoh (Garihshoh).

The dates of this great man's birth and death are not clear. However, we can say that he lived in the twelfth century, given that he was a student of Ahmad Yassaviy. Muhammad Sharif came from Arabia to the Greeks (present-day Turkey) from there, and from there he moved to Turkistan and became a student of HojaAhmed Yassaviy. From generation to generation, he is one of the descendants of Muhammad (peace be upon him). It is well known from the history that Fatima Zahra, the younger daughter of the Prophet, married and married her two sons (Imam Hasan and Imam Husain's descendants as Sayyidzade), and Muhammad Sharif Sayidzoda is one of our grandchildren(Carter, Thok, O'Rourke, & Pearce, 2015; Williamson, 2000).

It is said that in the fourth year of his studentship, Hoja Ahmad Yassaviy asked his disciples: "If the Lord will try us". He would break some of his disciples into a baking oven prepared for bread. "My dear, let them go to the oven!" The disciple came out of the oven. The level of his students was obvious to the teacher. They said, "O Muhammad, are you?" "The Lord is open to all," he replied. He said, 'Do not leave the oven empty.' They threw it into a dishwasher and closed its mouth.

A loaf of bread was opened and then they were sweating and reciting the Qur'an. Then, they say, "Okay, this is a white camel, and you get a place where you can get a camel, and you instill peace, enlightenment, religion, and nullification in these countries(Movius& Okladnikov, 1953; Rasanayagam, 2011)."

## LITERATURE REVIEW

It is known that Ahmad Yassaviy's ability to trust a student and take a stand for his independent life testifies to the fact that Muhammad Sharif has taken a great step forward. The camels of her camel go to Jonah's father.

They descend from their camels and seek ablution for the Asr prayer. But water did not exist anywhere. Then the great one will strike his staff into a rocky place, and water will flow out of it. This water is a sacred fountain of "Jondahor Ata". He rinsed his camel and rallied again, riding his camels a bit, and at Mevlana, which is now called Greco-Roman House, it does not stand up.

After that, he is held in the same place. There is such information among the local people, that with the advent of this Great War, the wars here and the various problems will be eliminated. He was called Grechoush, the so-called "knotter." The holy spring water at Jonadabhar's home is a claim to many diseases. Those who are suffering from yellow fever can quickly recover. People living in the villages say that healing waters are 70 healing.

One of the peculiarities of this reservoir is the existence of sacred fish here. These fish exist since the appearance of the fountain. The main feature of these fish is that they only appear to good-natured, honest, and clean people who go to the fountain, but they are not visible on a fountain. In addition, fish cannot be eaten. There is information in the local population about the death of two Soviet soldiers who have eaten these fishes during the Soviet era.

Therefore, these fish are sacred. Visiting pilgrims from different regions of the country visit the drinking water of this fountain and visit the temple. Sattor's brother Kodirov, who lives in the village of Garasha, says he is a teenager who suffers from yellow fever. Sattor agha would advise the village's loyal owners to drink from the spring water and wash it. Sattor aka will do all the things that they say and will soon get out of this trouble. As can be seen from the fact that spring water is extremely therapeutic and unique (Hasker et al., 2009; Jalilov, Desutter, & Leitch, 2011).

### Main part

Saidmurod's father Tolipov lives in this village when MevlanaGrekushoh and Jondahor Chambers are in the present condition. He was directly involved in the renovation of Jondahor Dad in 2003. During the years of independence, the temple was renovated through the hashar. Saidmurod is one of the oldest in the village. Jondahor has a lot of information about the Temple of Homes, and studies the history of this temple and collects manuscripts and oral information dating back to the present day. Everyone in the village of Garashi is proud of Mevlana's Grecian's descendants and strives to be worthy descendants of His Holiness. There are many saints and great ones who have grown up in our country. The information that has come to our attention about Muhammad Sharif consists mainly of legends and legends from generation to generation. But this great man never forgot his great works. Their spiritual heritage remains forever in our hearts.

**Picture 1. KnownPlaceofMuhammadSharif (MevlanaGrekushoh).**



Elder brother of Garashi, Umarhon Bobo Ihtiyorov, HomidboboAbdurakhmanov, Rauf Bobo Rashidov, Abdurahman bobo As-Rorov was captured by Solomon Baba Tovbayevstwo documents in a very small Arabic language in 2001and to the Ministry of Culture and Sportsand they have been trained(Adams, 2010; Movius & Okladnikov, 1953).



... There is a seal on the back of the first document, but who is it? it was impossible to determine that it was a seal. X, click on the document

**Picture 2. The sacred fountain in Jondahor's House of Worship**



The date of the resurrection dates back to 841 Hijri, 1438 AD in the capital of Movarounnahr, Samarkand Sultan Mirrit was a time when Ulugbek was ruling ... In it, recorded "In the year 841 Hijrah, the Sultan of 12 Rabbis' ul-Aleed (this in the context of Mirzo Ulughbek) Mawlano Garishox - the subject of the test near Shamsiddin Muhammad, a relative of the nearest hawk Sugdi the Marwak man in the Kalon district is a syurgal presented ... »The second document states that "in 909 Hijri (in the year 503 AD) from the Garishox generation to the person ... (could not be read) Sugdi is a southern-style countryside of Kalon district" was introduced.

## CONCLUSION

Magic Greco-Romans have many historical sites. But there is still a lot of information about these pilgrimages and their history. Studying such historical sites and knowing history of pilgrimages will help us to enjoy the heritage of our past generations. Therefore, it is important today to study these places and to introduce them to our people and to all mankind.

## REFERENCE

- Adams, L. (2010). The spectacular state: Culture and national identity in Uzbekistan. Retrieved
- Carter, R. W. (Bill), Thok, S., O'Rourke, V., & Pearce, T. (2015). Sustainable tourism and its use as a development strategy in Cambodia: a systematic literature review. *Journal of Sustainable Tourism*, 23(5), 797–818. <https://doi.org/10.1080/09669582.2014.978787>
- Hamidov, A., Thiel, A., & Zikos, D. (2015). Institutional design in transformation: A comparative study of local irrigation governance in Uzbekistan. *Environmental Science and Policy*, 53, 175–191. <https://doi.org/10.1016/j.envsci.2015.06.012>
- Hasker, E., Khodjikhonov, M., Usarova, S., Asamidinov, U., Yuldashova, U., Van Der Werf, M. J., ... Veen, J. (2009). Drug prescribing practices for tuberculosis in Uzbekistan. *International Journal of Tuberculosis and Lung Disease*, 13(11), 1405–1410.

Jalilov, S.-M., Desutter, T. M., & Leitch, J. A. (2011). Impact of Rogun Dam on downstream Uzbekistan agriculture. *International Journal of Water Resources and Environmental Engineering*, 3(September), 161–166. Retrieved from <http://www.academicjournals.org/ijwree>

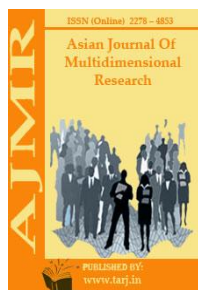
Moje, E., Quarterly, A. L.-R. R., & 2009, undefined. (n.d.). Literacy and identity: Examining the metaphors in history and contemporary research. Wiley Online Library. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1598/RRQ.44.4.7/full>

Movius, H., & Okladnikov, A. (1953). The Mousterian Cave of Teshik-Tash, Southeastern Uzbekistan, Central Asia.

Rasanayagam, J. (2011). Informal economy, informal state: the case of Uzbekistan. *International Journal of Sociology and Social Policy*, 31(11/12), 681–696. <https://doi.org/10.1108/01443331111177878>

Williamson, O. E. (2000). The New Institutional Economics: Taking Stock, Looking Ahead. *Journal of Economic Literature*, 38(3), 595–613. <https://doi.org/10.1257/jel.38.3.595>





## INFORMATION TECHNOLOGY USAGE METHODS IN EXPRESSING COMPONENTS IN ORGANIC CHEMISTRY COURSE

**Shernazarov I. E.\*; Abdukadirov A. A.\*\***

\*Academic lyceum teacher in TPTI,  
Email id: shernazarov\_iskandar855@mail.ru

\*\*Professor,  
Doctor of pedagogical sciences,  
UZBEKISTAN.

---

### ABSTRACT

*The main aim of this article is to analyze and provide innovative methods in which components are used in order to make the organic chemistry course more understandable. The use of modern information technology in the subject of "organic chemistry" teaches students to express their opinions in the group, to think independently and to work, to be sober and to be responsive. Through the use of information technology and Internet data, students are encouraged to apply their practical and laboratory work to increase students' interest in science, understanding the nature of chemical reactions, and the ability to fully understand the quality and structure of chemical products. In order to study organic chemistry, simple simulations are made on the basis of integration of information communication and pedagogical technologies and color animations have been developed, reflecting their 3D appearance.*

**KEYWORDS:** *Organic Chemistry, Effectiveness, Biology, Video Coupler, Cado Scope, Pedagogical.*

## **INTRODUCTION:**

Reforming at all stages of education in the "National Training Program" of the Republic of Uzbekistan is defined as the main task. One of the most important aspects of reform is the introduction of modern information technologies in the educational process. To explain the subject of the chemistry, multimedia, animated electronic textbooks on the subject, the use of space-based models for computer science and the use of computers in the learning process can be explained by the fact that students are more likely to master some topics and increase their interest in the subject. Interesting animations and slides on the subject are based on the combination of information technology and pedagogical technologies. For example, it is desirable to use interesting information on the subject in other disciplines to explain the subject, and to use information communication and pedagogical technologies when explaining the simplest methods to the students [1, 2].

## **MAIN PART:**

Continuation of further improvement of the continuous education system in the development of education and science in the "Priorities of social sector development" in the five priority areas of the development of the Republic of Uzbekistan in 2017-2021, increasing the capacity for quality educational services;

In order to undertake targeted measures to improve their material and technical basis by equipping educational institutions with modern teaching and laboratory equipment, computer equipment and teaching-methodological manuals;

In order to improve the quality of general secondary education, to enhance the effectiveness of teaching at a time when full-fledged ICTs have been implemented to deepen the teaching of foreign language, informatics, mathematics, physics, chemistry and biology, Since education is in demand today, the topic chosen is very important for pupils.

The use of modern information technology in the subject of "organic chemistry" teaches students to express their opinions in the group, to think independently and to work, to be sober and to be responsive. They increase their interest in "Organic Chemistry" and encourage students to take action. The use of modern information technologies in the teaching process of "organic chemistry" enrich science-based guidelines and guidelines for the introduction of information technology into the educational process of continuous education.

Access to information technology is based on computer, video projector, video coupler, cadoscope, slides, and related animation and Internet data.

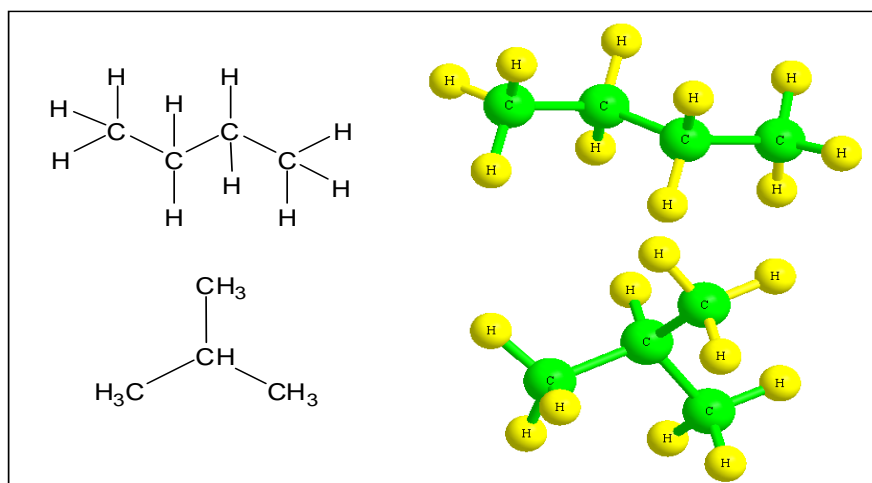
This course is designed to provide an explicit explanation of the subject, using the pedagogical technologies, to prepare students an animated look or video of chemical processes that are difficult to imagine. The animation prepared for the students should include an animated look of slides, interdisciplinary communication, increased interest of students in science, important aspects of organic chemistry, reaction equations, properties of substances, reactions, spatial visions, usage and laboratory processes.

Through the use of information technology and Internet data, students are encouraged to apply their practical and laboratory work to increase students' interest in science, understanding the nature of chemical reactions, and the ability to fully understand the quality and structure of chemical products.

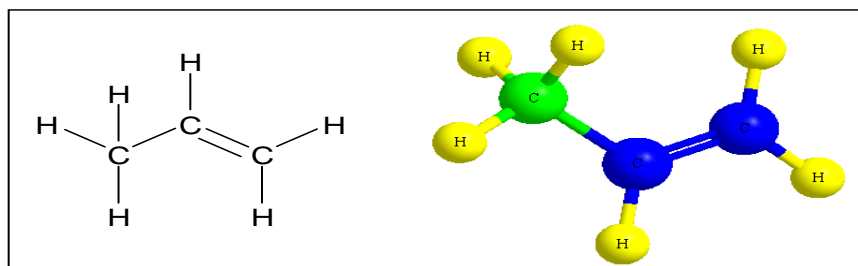
It is well-known that students have the ability to recall color-enhancing processes that they themselves see most often. From the age of childhood, they are well aware of how to paint colorful things, such as painting various pictures and colors [4, 5, 6].

Using the Chem3D Ultra 10.0 software and the use of information technology, we can describe the organic matter in the light of the ability of the readers to take into account the abilities of organic matter by the use of color images and animations in their spatial appearance. For example

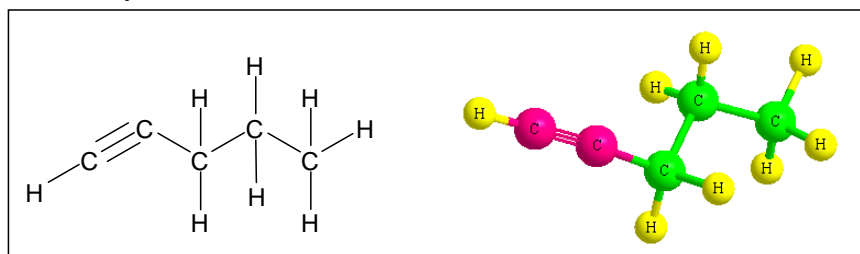
Example 1: Isolation of butane ( $C_4H_{10}$ ) in saturated hydrocarbons (normal-butane and isbutane) as follows:



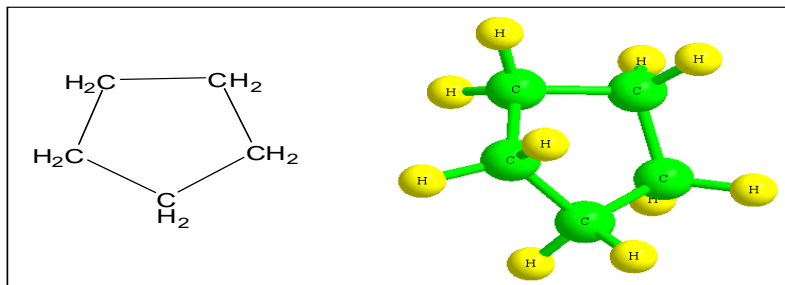
Example 2: The spatial appearance of  $C_3H_6$  in unsaturated hydrocarbons can be described as follows.



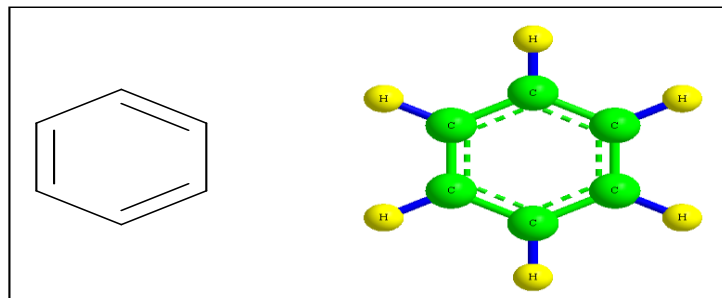
Example 3: We describe the color image of the spatial appearance of the pentin-1 ( $C_5H_8$ ) content of unsaturated hydrocarbons. .



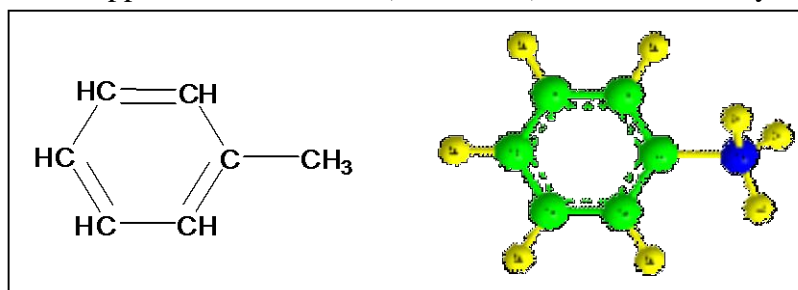
Example 4: Cyclopentane (C<sub>5</sub>H<sub>10</sub>) cycloalkanes spatially.



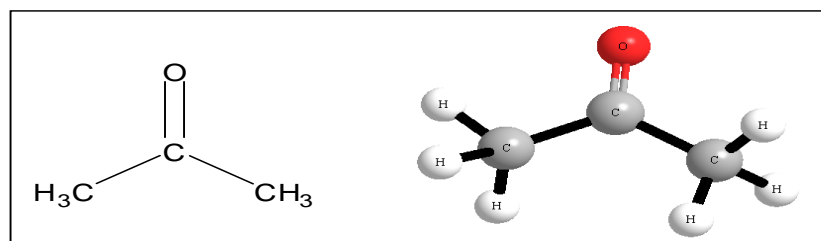
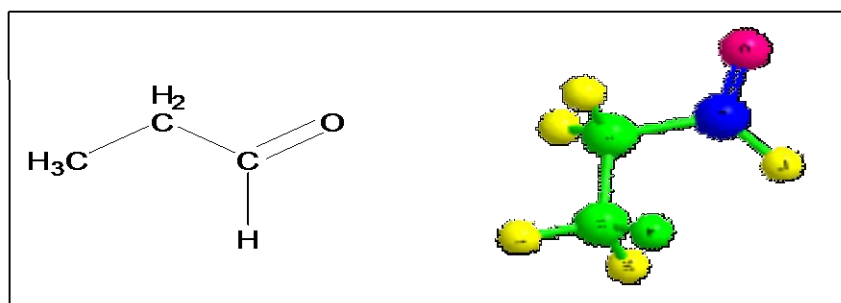
Example 5: Spatial visibility of benzene (C<sub>6</sub>H<sub>6</sub>) from aromatic hydrocarbons



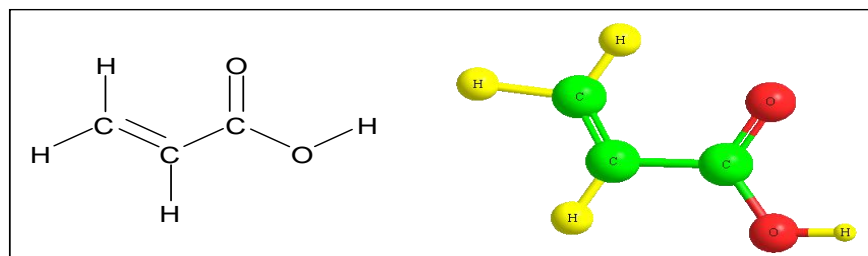
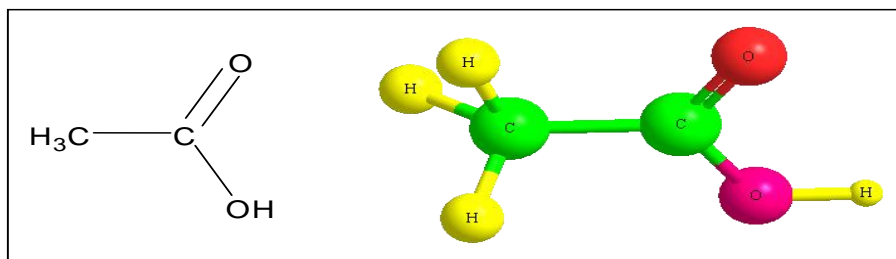
Example 6: The cosmic appearance of toluene (C<sub>6</sub>H<sub>5</sub>CH<sub>3</sub>) from aromatic hydrocarbons.



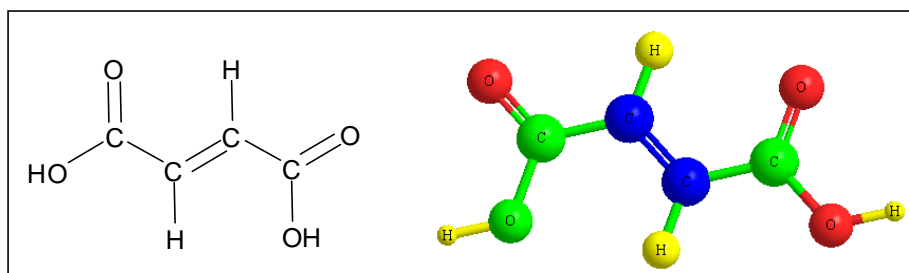
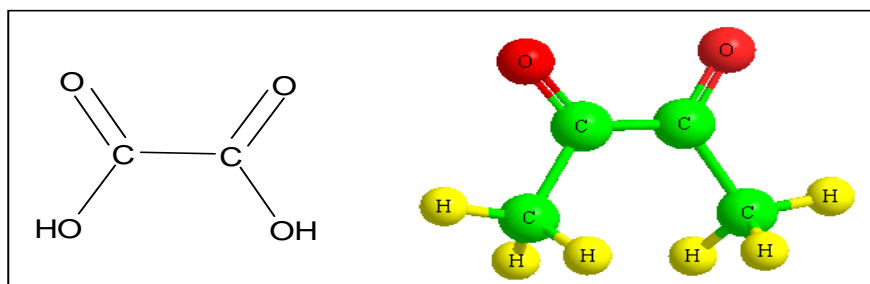
Example 7: The aldehyde and ketones of oxygen organic matter (C<sub>3</sub>H<sub>6</sub>O) are expressed in spatial representation.



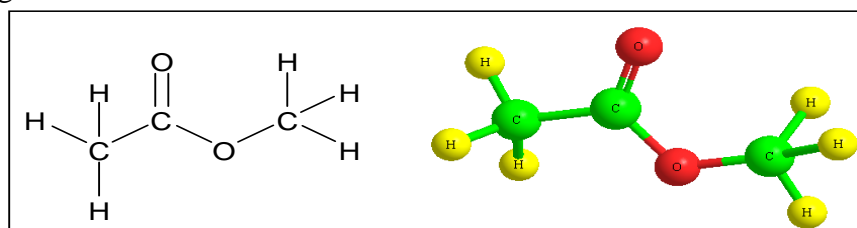
Example 8: Acrylic acid ( $\text{CH}_2 = \text{CH}-\text{COOH}$ ) of acetic acid ( $\text{CH}_3\text{COOH}$ ) and unsaturated monocarboxylic acids from saturated monocarboxylic acids from oxygenated organic compounds are described as follows.



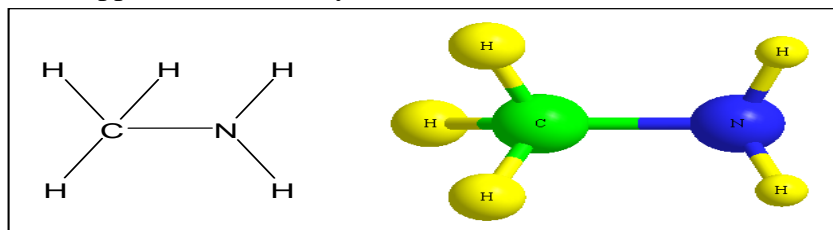
Example 9: oxalic acid organic oxalic acid oxalic acid ( $\text{HOOC}-\text{COOH}$ ) and fumaric acid ( $\text{HOOC}-\text{CH} = \text{CH}-\text{COOH}$ ) from unsaturated dicarboxylic acids will see the spatial appearance of oxalic acid and fumaric acid.



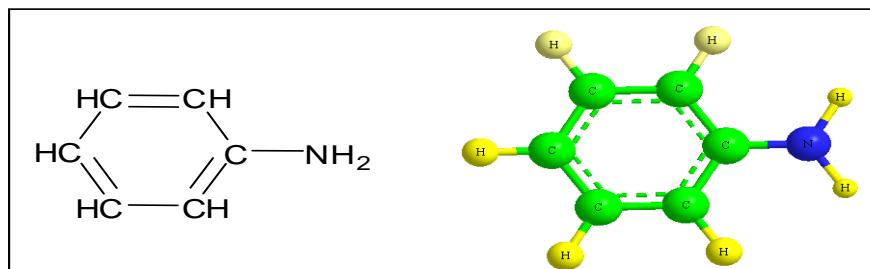
Example 9: Spatial viscosity of methyl acetate ( $\text{CH}_3-\text{COOCH}_3$ ) from complex ethanol in oxygenated organic matters.



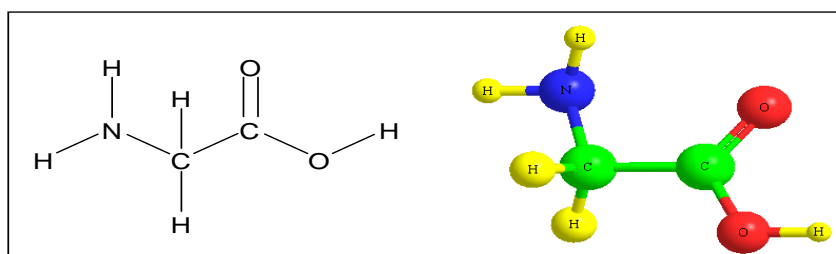
Example 10: Methyl amine ( $\text{CH}_3\text{-NH}_2$ ) from the nitrogenous organic compounds according to the above, the cosmic appearance of methyl amine



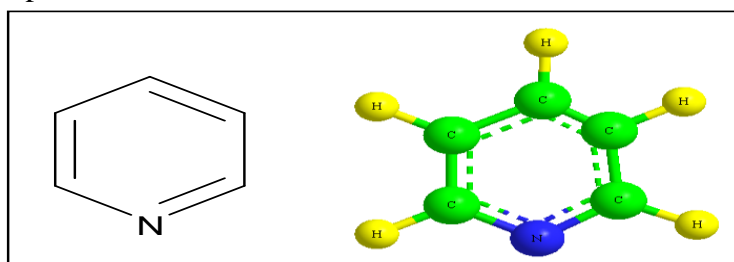
Example 11: The composition of aniline ( $\text{C}_6\text{H}_5\text{-NH}_2$ ) from nitrogenous organic compounds according to the above describes the cosmic appearance of aniline.



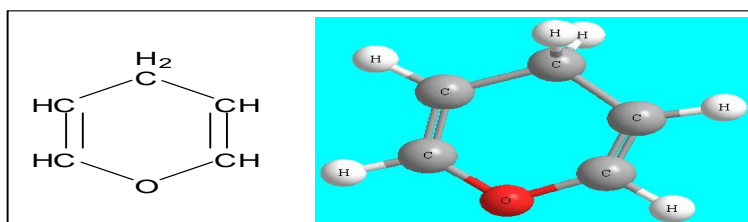
Example 12: We represent the spatial appearance of aminosirka acid (glycine) ( $\text{NH}_2\text{-CH}_2\text{-COOH}$ ).



Example 13: The spatial appearance of pyridine ( $\text{C}_5\text{H}_5\text{N}$ ) from nitrogen-containing heterocyclic compounds can be expressed as:

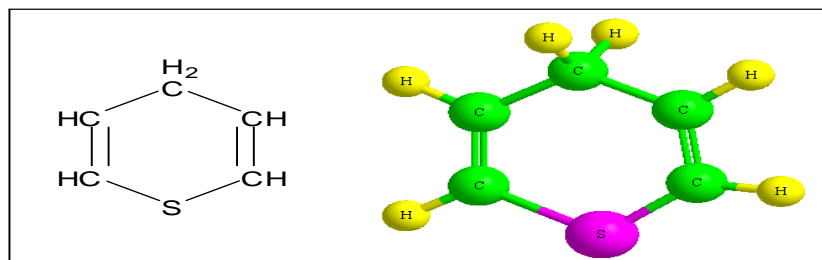


Example 14: Piran ( $\text{C}_5\text{H}_6\text{O}$ ) spatial blinds from oxygen-containing heterocyclic compounds can be described as follows.

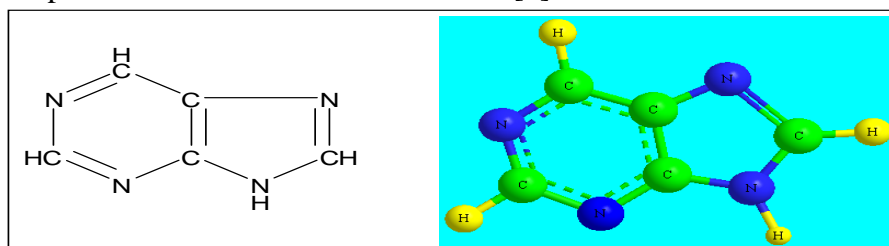




Example 15: Spatial visibility of thiopyrane ( $C_5H_6S$ ) from sulfur heterocyclic compounds is as follows:



Example 16: The spatial appearance of the purine ( $C_5H_4N_4$ ) content of nitrogen-containing heterocyclic compounds can be illustrated as follows [3].



An animated explanation of the above-mentioned formulas using information communication to the readers showed that readers could easily detect the elements of any organic matter by using these formulas and hybrid species. Thus, it is easier to absorb the spatial visibility of the substances mentioned above with the help of information technology, and to explain the formulas of organic matter formation [7-11].

### CONCLUSION:

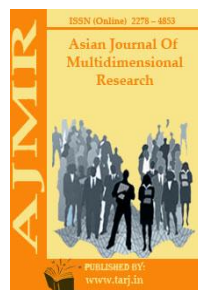
In order to study organic chemistry, simple simulations are made on the basis of integration of information communication and pedagogical technologies and color animations have been developed, reflecting their 3D appearance. Through these animations, students can learn the spatial formations of organic matter, their properties, and their properties.

The abovementioned formulas were used for the pupils of the academic lyceum of the Tashkent Pediatric Medical Institute.

### LITERATURE

1. Avlyakulov N.X. Modern teaching technologies. Methodical guide. T. 2001. -B.164.
2. Abdukodirov A., Pardaev A. Methods of using modern pedagogical technologies in education and upbringing: Tashkent: Istedod, 2014. -B.5-105.
3. Abdusamatov A., Mirzaev R., Ziyaev R. Organic chemistry "for academic lyceums and professional colleges" - Tashkent: Teacher, 2016.-B.272.
4. Information technologies. Textbook for academic lyceums and professional colleges / Abdukodirov AA, Khayitov A.G., Shodiyev R.R. - T.: Teacher, 2002. - B.148.
5. Babanskiy Yu.K. Teaching Methods in Modern High School: Tashkent. Teacher, 1990. - B.230.

6. Begimkulov U.Sh. Scientific and theoretical foundations of introduction of modern information technologies in pedagogical education: -Tashkent. Fan, 2007. -B.164.
7. Borovskix. T.A. Individualization obucheniya ximii na osnove sovremennykh obrazovatelnykh tekhnologiy // - Moskva. MPGU. Virtual Gallery, 2011. -B.217.
8. Z. Halikova "Pedagogical Innovations and Their Peculiarities" Educational Problems № 1. 2010. 48-49 b.
9. Zashivalova E. Yu. Methodology Компьютерное обучения химии в основной школе:.. Dissertation pad nauk - St. Petersburg: - 2000.-B.167.
10. Internet data at <https://www.youtube.com>
11. Yuldashev J. G., Usmanov S.A. Implementation of modern pedagogical technologies // - Tashkent: Science and Technology, 2008. 132-134 b.



## A SCIENTIFIC STUDY ON INTERNET BASED CO-OPERATIVE E-LEARNING: ONE MORE STEP OF DIGITIZAL WORLD

Dr. Santosh Parakh\*; Dr. Kavita Suryawanshi\*\*

\*Head of Masters in Computer Application,  
Department, VIIT, Baramati,  
Dist. Pune, Maharashtra, INDIA  
Email id: santoshparakh@gmail.com

\*\*Associate Professor,  
Dr. D. Y. Patil Institute of MCA & Management,  
Akurdi, Pune, INDIA  
Email id: kavita1104@yahoo.com

### ABSTRACT

*This paper signifies to identify and discuss the areas of e-learning that are important in describing the state of the art in e-learning specifically related to the need for systems and actions supporting the learner. A shareable and adaptable general-purpose model of integrated e-learning is introduced based on recent research with supporting cooperative learning reference model. The paper emphasizes the paramount need for organizations to get into the continuous learning mode to succeed and survive in the knowledge era.*

**KEYWORDS:** *Cooperative Learning, Digitization, E-Learning*

## 1. INTRODUCTION

E-Learning is the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration. "E-learning is the collection of teaching and information packages in further education which is available at any time and any place and are delivered to learners electronically. They contain units of information, self-testing batteries and tests, which allow a quick self-evaluation for quick placement. E-learning offers lower level learning goals. Higher order goals like understanding, reasoning and (moral) judging are more difficult to achieve. They require an individualised interactive discourse and can hardly be planned."

The term e-learning is, as one can see, not very precise, and it should be pointed out that learning is just one element of education. So, the term online education should cover a much broader range of services than the term e-learning. One may also claim that e-learning companies often focus on course content, while *online* education institutions cover the whole range of educational services of which student support most often is given major emphasis. During the last 15 years a great many institutions worldwide have embarked on developing and offering online distance education. Institutions with a historical background from traditional on-campus education often seem to transfer teaching/learning philosophies, theories, concepts and metaphors from this environment. Keegan (2000) argues that web based education is best regarded as a subset of distance education and that the skills, literature and practical management decisions that have been developed in the form of educational provision known as 'distance education' will be applicable *mutatis mutandis* to web based education. It also follows that the literature of the field of educational research known as distance education, is of value for those embarking on training on the web." Hence, the project, Student Support Services in E-Learning, deals specifically defining and integrating student support services into Internet based e-learning solutions to produce online distance education that can offer complete educational experiences for individual students and groups of students.

## 2. COOPERATIVE LEARNING AND CONSTRUCTIVISM

David McConnell gives an introduction to computer supported cooperative learning in his book 'Implementing Computer Supporting Cooperative learning (2000).

Cooperation in learning is not new. Students have formally and informally cooperated in learning processes however as a way of thinking about and conducting learning processes, 'cooperative learning' is a fairly new concept. Planning and conducting cooperative learning means formalising what happens informally in many settings. According to Argyle (1991) there are three possible reasons for cooperating:

1. For external rewards – in education, eg. achieve better grades, diplomas and degrees
2. To share activities
3. To form and further relationships

Often the educational system can be seen as one, which encourage competition and not cooperation. Often students are required to do the same work, and results are compared and often also a limited number of high grades are granted. The students compete on a zero-sum basis. Whatever one person wins, others lose.

In cooperative learning the theory is that everyone wins no one loses. The learning process is not seen as an individual pursuit concerned with accumulating knowledge, but as part of a social

process where students help each other to develop understanding in an enjoyable and stimulating context. The learning is process driven and learners must be involved in the social process and pay attention to this process to achieve their desired goals. The outcomes are not only academic, but involve increased competence in working with others, self-understanding and self-confidence. The learning activities may end up in group products which would not be achievable if learners worked individually, or the process may consist of learners helping and supporting each other in achieving individual learning goals.

The developments of online learning have spurred interest for computer-supported cooperative learning. Computer supported cooperative learning is based in socially oriented learning theories, such as 'constructivism' or 'social constructivism'. Emerging from the work of Piaget and following the role of peer interaction in cognitive development has been influential for our concept of learning. Learning is seen as a construction of meaning in interaction with others (teacher and fellow students). Knowledge is constructed in social groups.

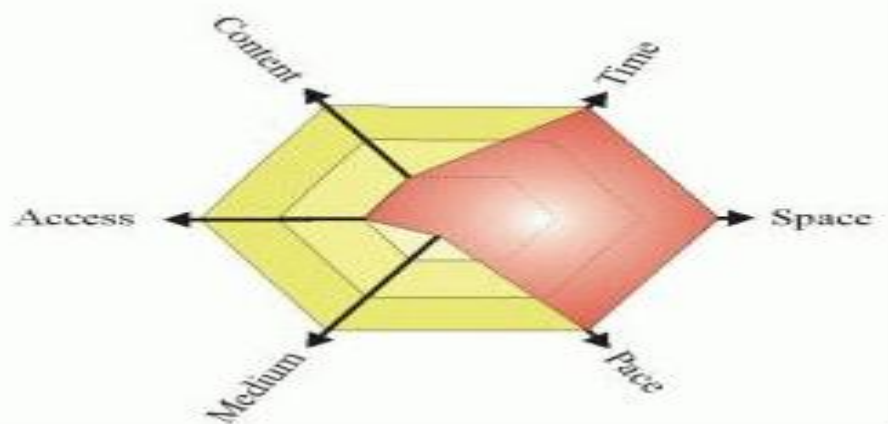
A meta-study by Johnson & Johnson (1990) (from McConnell 2000) concludes that cooperative methods lead to higher achievement than competitive or individualistic methods:

1. Students in cooperative learning environments perform better
2. Students in cooperative groups solve problem faster
3. Students in cooperative work use elaboration techniques and meta-cognitive strategies more often than those working in competitive and individualistic situations
4. Higher level reasoning is promoted by cooperative learning
5. Students in cooperative groups discover and use more high-level strategy methods
6. New ideas and solutions are generated in cooperative learning groups that are not generated when people are working on their own
7. When individuals have worked in cooperative groups, their learning is transferred to situations where they have to work on their own.

### **3. FLEXIBILITY**

In online education there is a conflict of interest between many students who prefer individual flexibility and educators who promote collaborative learning. Many students choose to study online because they want or need individual flexibility. They have full-time jobs and family responsibilities, and many are reluctant to participate if it means relinquishing high-quality family life and job achievements. They need flexible education: education that allows them to combine job, family, and education in a manageable way.

Figure 1 illustrates six dimensions of flexibility that many individual students want. Many institutions have put major emphasis on designing online courses to be flexible concerning time and schedules. It is a great challenge to develop online learning environments that support this individual freedom as well as collaborative learning. This challenge is discussed in the theory of cooperative freedom (Paulsen 1993). There is no doubt that design and administration of student services is related to how the teaching learning model emphasizes individual freedom in learning relative to collaborative learning.



*Figure 1. Relations between individual flexibility and affinity to learning community*

#### **4. ACCESSIBILITY**

There is a growing interest of accessibility to web content, which focuses on how to make web content more accessible to people with disabilities. Many interdependent standards and specifications not just the World Wide Web, directly or indirectly affect the development and administration of web sites and web services. Considerations include the interoperability, accessibility and usability of web pages and web sites. Web standards, in the broader sense, consist of the following:

- World Wide Web Consortium (W3C)
- Internet Engineering Task Force (IETF)
- Ecma International (formerly ECMA)
- Internet Assigned Numbers Authority (IANA)

One may expect that more e-learning providers will utilize the result from the accessibility initiatives in the future. Increasing accessibility is also one aspect of student support in e-learning.

#### **5. TEACHING MODELS AND ORGANISATIONAL MODELS FOR ONLINE EDUCATION**

There is hardly no doubt that our view on teaching and learning will influence our choice of methods, organisational models and (perhaps also) learning management systems and for online teaching. It will also to a large degree influence how we perceive the need for student support systems and how we design, organise and operate student support in the system.

It also seems that some learning models are better suited to one type of organisation than another. Thus, one will find that traditional institutions offering online education to on-campus students and/or distance students and specialised distance teaching institutions tend to choose different models for their online courses as well as to teaching and guidance within the specific course.

#### **6. CONCERN FOR STUDYING ONLINE**

David Sewart has worked with central and local support services at the UK Open University since 1973. His theoretical approach to teaching at a distance can be summed up as a 'concern for students studying at a distance'. He discusses the dilemma between the efforts of some course developers to produce the 'hypothetically perfect teaching package or put more resources into



the support system for students during study. He finds the perfect package to be unrealisable and however perfect the pre-produced material is, the teacher, tutor or tutor-counsellor as well as student advisors are necessary as intermediaries between the learning material and the individual student. Already during the planning stage of the Open University counselling, guidance and support were in focus, and the Project Working Group on Counselling and Tutorial Services listed among functions of the counsellors (Sewart 1978):

#### **Personal continuing relationship with student**

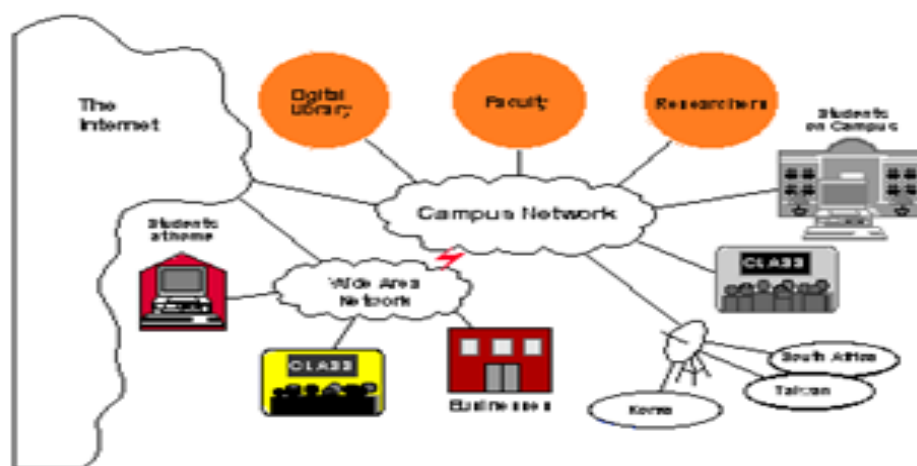
- ✓ Contact and encouragement.
- ✓ Help students with general study problems
- ✓ Personal and social needs of the student, including domestic and personal problems
- ✓ Create conditions for students to meet informally and create for informal group discussions
- ✓ Make contact with students unable to meet at study centres
- ✓ Prevent drop out and follow up non or irregular attendance
- ✓ Advice students on vocational and further education opportunities
- ✓ Advice students for further Open University courses

David Sewart also maintains that the success of the Open University largely is a result of its support and counselling systems.

### **7. SUPPORT SERVICES IN ONLINE EDUCATION**

“Planning and designing a virtual university or a virtual campus is a complex task involving many different aspects of higher education administration and instructional delivery. In the early days of online courses, just putting course syllabi on the Web is worthy of attracting some attention. Nowadays many online courses are offered using a combination of asynchronous and synchronous computer conferencing, slide presentation on the Web, and file transfer systems. Though course delivery is an important component of virtual university, it is not the only component. In order to create a successful academic environment for a distance learner, various support services to students and faculty members have to be included in the plan as integral part of a virtual university.”

The outer ring illustrates how the virtual university is broken down to four major components: administrative services, student services, resource services, and faculty services. Each component has a different purpose and provides students with different services to support the student’s learning. As described by Aoki and Pogroszewski (Ibid.) the second outer ring in the model shows the types of services a student receives from each of the four component areas. The inner three rings represent (from the innermost): 1) the student and his or her relationship to each of these four areas; 2) transmission systems with which the services can be accessed by students; and 3) applications and tools to be used in offering the service elements in the outer ring. The students are placed in the centre of the model to point out the importance that all the service components and elements are depicted in relation to the students.



*Figure 2. The Virtual University Reference Model*

## 8. CASE STUDIES

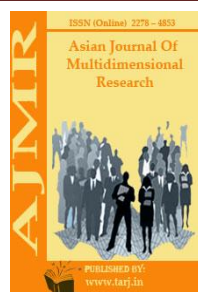
- [1] Bringing Online Learning to a Research-Intensive University (08/31/07)
- [2] By Niall Watts, Educational Technology Officer, University College Dublin Teaching Art at a Distance (12/28/06)
- [3] By Michael Stewart, Director, Studio Art School Confessions of an E-learning Procrastinator (7/28/06)
- [4] By Clare Gill Building Stronger Virtual Teams (7/18/06)
- [5] By Edward Volchok, Stevens Institute of Technology, Creating an Independent Online Course for a Niche Skill (6/30/06)
- [6] Classic Education Meets 21st-Century Technology, By Rita R. Owens, Associate Academic V.P. for Technology, Boston College , Putting Learning Systems to Work (5/19/05)
- [7] Applying Learning Technology to Innovative Project Development, By Theresa Edgington, Department of Information Systems, Arizona State University, Telling an Old Story in a New Way: Raid on Deerfield (6/15/04)
- [8] By Tony Kypreos, Chief Commercial Officer, Bluewave, Support in a Distance Education Environment (10/17/02)

## 9. REFERENCES

- [1] Van der Klink, M., & Jochems, W., Management and organisation of integrated e-learning in Integrated E-Learning: implications for pedagogy, technology and organisation, Jochems, W., van Merriënboer, J., and Koper, R., Routledge&Falmer, London, 2004.
- [2] Prospects for Using Learning Objects and Learning Design as Staff Development Tools in Higher Education Casey J., Greller W., & Brosnan K., published in the Proceedings of Cognition and Exploratory Learning in the Digital Age (CELDA 2005) 2005
- [3] Casey, J., Wilson, P., 2006, A Practical Guide to Providing Flexible Learning in Further and Higher Education, Quality Assurance Agency for Higher Education Scotland Committee, Glasgow, 2006 (in print - due to be published Spring 2006)
- [4] Pollock, N., & Cornford, J., Theory and Practice of the Virtual University: report on UK universities use of new technologies. In ARIADNE issue 24, 2000 <http://www.ariadne.ac.uk/issue24/virtual-universities/>

- [5] Wenger, E. *Communities of Practice*, Cambridge University Press, Cambridge, 1998
- [6] Singleton, W., *The Mind at Work; psychological ergonomics*, Cambridge University press, 1989
- [7] Senge, P., & Sterman, J., *Systems Thinking and Organisational Learning: acting locally and thinking globally in the organisation of the future*, in Morecroft, J., & Sterman, J., *Modelling for Learning Organisations*, Productivity Press, Portland, Oregon, 1994
- [8] Ramsden, P., *Learning to Teach in Higher Education*, Routledge, London, 1991
- [9] Corben, A., Wolstenhome, E., & Stevenson, R., *A product improvement case study using systems modeling*, in *Executive Development*, (8, 4), pp 32-36, MCB University Press (now Emerald), 1995
- [10] Normand, C. Littlejohn, A., *A Model for Effective Implementation of Flexible Programme Delivery*, Quality Assurance Agency for Higher Education Scotland Committee, Glasgow, 2006 (in print - due to be published Spring 2006)
- [11] Aoki, K. and D. Pogroszewski. 1998. *Virtual University Reference Model: A Guide to Delivering Education and Support Services to the Distance Learner*. <http://www.westga.edu/~distance/aoki13.html>
- [12] Argyle, M. 1991: *Cooperation: The basis of sociability*. London: Routledge.
- [13] Bajtelsmit, J. W. (1988): *Predicting Distance Learning Dropouts: Testing a Conceptual Model of Attrition in Distance Education*. Report to the ICDE Research Committee.
- [14] Bartels, J., Helms, F. P., Rossie, U. & Schormann, J. (1988): *Studienverhalten von Fernstudenten*. Hagen, FernUniversität. ZIFF.
- [15] Dichanz, H. 2001: *E-learning, a linguistic, psychological and pedagogical analysis of a misleading term*. Paper presented at the 20th ICDE World Conference in Düsseldorf 2001.
- [16] Garrison, D. R. 1989: *Understanding Distance Education*. London/New York: Routledge.
- [17] Garrison, D. R. 1993: *Quality and access in distance education: theoretical considerations*. In: Keegan, D. (ed.): *Theoretical Principles of Distance education*. London/New York: Routledge.
- [18] Holmberg, B. 1960. *On the methods of teaching by correspondence*. Lunds universitets årsskrift. Lund: Gleerup
- [19] Holmberg, B. 2001: *A Theory of Distance Education Based on Empathy* (unpublished paper).
- [20] Johnson, D. V. & Johnson, R. T. 1990: *Cooperative Learning and Achievement*. In: Sharan, S. : *Cooperative Learning. Theory and Research*. New York: Praeger.
- [21] Keegan, D. 1983. *Theories of distance education*. In *Distance Education: International Perspectives*, eds. D. Sewart, D. Keegan, and B. Holmberg, 63-67. London: Routledge.
- [22] Keegan, D. 1996. *Foundations of Distance Education*. 3rd Ed. London: Routledge.
- [23] Keegan, D. 2000. *Seamless interfaces: from distance education to web based training*. *Istruzione a distanza*, 16, Aprile 2000, pp. 7-21. <http://www.nki.no/eeileo/research/seamless.htm>

- [24] Knowles, M. S. 1970: *The Modern Practice of Adult Education*. New York: Association Press.
- [25] Marton, F., Hounsell, D. & Entwistle, N. 1997: *The Experience of Learning. Implications for Teaching and Studying in Higher Education*. Edinburgh, Scottish Academic Press.
- [26] Morgan, A. 1993: *Improving your students learning. Reflections on the Experience of Study*. London, KoganPage.
- [27] Mason, R. 1998. *Globalising Education. Trends and applications*. New York, NY: Routledge.
- [28] McConnell, D. 2000: *Implementing Computer Supported Cooperative Learning*. London/Sterling: KoganPage.
- [29] Moore, M. G. 1991: Editorial: Distance Education Theory. *Am. J. of dist. Ed.* 5, 3, pp. 1-6.
- [30] Moore, M. G. 1993: Theory of transactional distance. In: Keegan, D. (ed.): *Theoretical Principles of Distance education*. London/New York: Routledge.
- [31] Paulsen, M. F. 1993. *The Hexagon Of Cooperative Freedom: A Distance Education Theory Attuned to Computer Conferencing*. DEOSNEWS Vol. 3 No. 2.
- [32] Paulsen, M. F. 2000. *Online Education, An International Analysis of Web-based Education and Strategic Recommendations for Decision Makers*, NKI. <http://www.nettskolen.com/pub/artikkel.xsql?artid=131>
- [33] Peters, O. 1965: *Die Didaktische Struktur des Fernunterrichts. Unter such ungenzueinen industrialisierten Form des Lehrens und Lernens*.
- [34] Peters, O. 1983: *Distance teaching and industrial production: a comparative interpretation in outline*. In: Sewart, D., Keegan, D. & Holmberg, B. (eds.): *Distance Education. International Perspectives*. Croom Helm.
- [35] Peters, O. 1989: *The iceberg has not melted: further refelctions on the concept of industrialisation and distance teaching*. *Open Learning*, 4, 3, pp. 3-8.
- [36] Peters, O. 1992: *Some observations on dropping out in distance education*. *Distance Ed.*, 13, 2, 234-269.
- [37] Phillips, A., Phillips, M. & Christmas, D. (2001): *Student services on the web: Towards an integrated approach*. Paper to the 20th ICDE World Conference, Düsseldorf.



## ECONOMIC DIVERSIFICATION IN THE WEST ASIAN ECONOMIES AND INTEREST OF THE WEST

**Maajid Hussain Bhat\***

\*Doctoral Candidate,  
Aligarh Muslim University, Aligarh,  
Uttar Pradesh, INDIA  
Email id: maajidbhat007@gmail.com

---

### ABSTRACT

*Modern day economies are turning out to be a complex network of economic activities mingled with the national interests and geo-politics of the regions concerned. West Asia is one such region where the economies are primarily single sectoral and hence very much dependent on the developed nations. The regional imbalances have also added to the political vibrancy and interest of the foreign nations in the region. The region is witnessing the diversification of its economies at a large scale and hence the increasing interests of the West especially the United States of America. This paper discusses the way foreign interventions are increasing in the Middle East and the economics of the diversification of the Gulf economies.*

**KEYWORDS:** *Diversification, Middle East, Foreign Interests, USA*

---

### INTRODUCTION

Diversification of the economy precisely means to work on multiple potential sectors of income and employment generation so that the economy does not rely on single or limited sectors of production and employment generation. This mechanism has been utilized as a system to change the economy from utilizing a solitary source of income and employment generation to different potential sectors of income generation by developing the essential, secondary and tertiary sectors, including enormous involvement of the human capital. The target has consistently been to improve financial execution for accomplishing manageable development; for instance, building strength against shocks in extra-regional monetary movement (Nourse, 1968), lessening powerlessness to salary misfortune because of unpredictability of item cost on the universal market, making openings for work and easing destitution.

A healthy, developing, dynamic economy is the objective of each country on the planet. A sustainable economy improves a country's way of life by making riches and employments, empowering the advancement of new learning and innovation, and guaranteeing a stable political atmosphere. Having a differing economy—that is, one dependent on a wide scope of productive

divisions, not only a couple—has for quite some time been thought to assume a key job in a sustainable economy. There is a connection between monetary decent variety and manageability, and financial broadening can diminish a country's monetary instability and augment its genuine movement execution. Besides, there are measurements that policymakers can use to gauge these key monetary measurements and ways that they can advance their country's long haul financial wellbeing and dependability.

This investigation and then the results extracted out of Booz Allen Hamilton's work helping Middle Eastern governments, especially those in the Gulf Cooperation Council (GCC), plan their monetary improvement methodologies and innovation motivation—that is, their "changes" from economies dependent on a solitary product to strong, well-enhanced ones. These nations, rich in hydrocarbons and with economies vigorously put resources into oil and gas, face an especially overwhelming test in differentiating; therefore, it was imperative to decide exactly how basic financial decent variety was to their production of manageable economies.

### **Economic Diversification and the case of Middle East**

The relative economic stability of a local area is frequently related to the extent of diversification of the sources of income and employment. Areas which derive their economic sustenance from one or a few industries are considered to be more exposed to the possibility of wider fluctuations while areas which have a wide variety of sources of income tend to be relatively sheltered from the extreme vicissitudes of cyclical behavior. In order to test a hypothesis of this order it is first necessary to define diversification in measurable terms. The index suggested here takes into account two elements of economic diversification: the relative number of industries operating in a local area and the distribution of employment among these industries. The term "industry" is used to refer to all sources of employment, manufacturing as well as nonmanufacturing.

We have widely accepted and most established notion that the Middle Eastern economies especially the Gulf Cooperation council countries (GCC onwards) are primarily oil economies. These economies are very much dependent on their hydrocarbon resources. Hydrocarbons being the solitary source of economic activity and a major component in the GDP in these economies makes them very much vulnerable to economic shocks due to fluctuations in oil prices across the international market. Secondly, the rate of depletion of hydrocarbon resources puts all these economies on the cross roads.

Likewise, the study which was carried out by Booz and Company in 2008 came out with the evidence of GCC Countries having the Lowest Diversification Quotients; "GCC nations have the concentrations in terms of sector contribution to GDP and thus the lowest diversification quotients due to the historic dominance by the oil and gas sector." On the other hand, it tends to be seen that France, Germany, and Norway, which is likewise a significant hydrocarbon exporter, display a certainly lower monetary fixation. The instance of Norway displays that being wealthy in oil and gas sources does not really drive unreasonable investment focus. Continued, vigorous arrangements concentrated on broadening can emphatically influence an economy, and countries wealth in any single item should be especially mindful so as to stay away from a characteristic inclination towards investment fixation (Shediak et al. 2008).

In particular, regardless of expansion endeavors, hydrocarbons keep on being the essential export item for GCC economies. Correspondingly, government income over every one of the six GCC economies remains profoundly reliant on hydrocarbons, which in 2007 represented in any event 70% of absolute government income, barring speculation income (EIA, 2008 Energy



Information Administration (EIA), 2008. This outcome can be clarified by the way that GCC represents 44% of the world's demonstrated stores of unrefined petroleum. Its unrefined creation and exports speak to around one-fifth of the world's all out yield and one-fourth of exports. Moreover, the per capita petroleum gas generation and utilization in the GCC is one of the most noteworthy in the world; indeed, Qatar, Bahrain, and Kuwait are positioned on the highest priority on the rundown of the nations that have the most noticeable per capita gas utilization on the planet.

On the other hand, Manufacturing is a much littler a sector than the hydrocarbon sector and every one of the GCC economies are looking to make innovations in developing the manufacturing sector and the vitality of this serious and sustainable dimension where they see their relative favorable position lies, as Akara and Long (2008) take note. Oman and Qatar are building up various innovative and broad invest plans, for example, aluminum and preparation plants. Saudi Arabia, through five-year improvement plans, has looked to distribute its oil pay to change its generally undeveloped, oil-based economy into that of a cutting edge mechanical manufacturing economy. Albeit financial organizers have not accomplished every one of their objectives, the economy exhibits a critical advancement. Substantial reliance on oil income proceeds, yet industry and agribusiness currently represent a bigger portion of monetary action.

Oil has given the assets to the region's economic change, being utilized to create foundation, make business and bolster nearby populaces. The income from oil has stream on advantages to most different parts. Under this point of view, the worldwide finance and economy related emergency is essentially influencing GCC economies, as oil incomes drop impressively (i.e., normal 2009 cost of \$75 per barrel) making a visible drawback. Changes in oil costs have prompted enormous swings in government consumptions, ostensible GDP, and export income. To address the antagonistic effect of these vacillations, the GCC countries have attempted to broaden their production or income generation base. Moreover, nations, for example, Kuwait and Oman have aggregated sizable money related resources for who and what is to come and help pad the budgetary effect of a potential drop in oil income (KISR, 2008 Kuwait Institute for Scientific Research (KISR), 2008. In the manner towards the decrease of economic concentration, areas like petrochemicals and impressive escalated ventures, for example, aluminum, iron, and bond will permit broadening of incomes that stream from the exports of unrefined petroleum and thus become less defenseless against potential oil income variances.

Single cell protein (SCP), regarded as a revolution in the field of biotechnology in Middle East is a rising innovation that can help lighten the potential foreseen world sustenance deficiency. In the specific setting of Kuwait, it is an industry that aims to add to the nourishment security and some independence in sustenance creation; redesign the nation's oil assets and lead to higher export income; fortify the nation's production base; and through its forward linkages add to Kuwait's proceeding with enhancement and industrialization endeavors. Moreover, the improvement by KISR of a methanol-based industrial production that develops at a relatively high maturation temperature is a contributing component to the project's business suitability and an additional inspiration for Kuwait to seek after the advancement of this industry. In 2012, Saudi Arabia was the world's largest producer and exporter of all the petroleum fluids, just as the world's biggest holder of unrefined petroleum reserves. Moreover, the IEA and the Energy Information Administration (EIA), among others, anticipate that a developing portion of the world's interest for oil in the coming decades will be met by Gulf economies, driven by Saudi Arabia and Iraq.<sup>4</sup> Finally, since the late 2000s, the Kingdom has kept up the world's biggest

extra extraction limit. This enormous limit gives Riyadh a main job in settling worldwide oil advertises in the midst of common or political emergencies. This blushing picture, notwithstanding, does not recount to the entire story. While the Kingdom is blessed to have plentiful hydrocarbon stores, these oil and gas stores are limited. Over the most recent, a very long while, most nations of which both the oil producing and the customer nations have put resources into enhancing their vitality blend, concentrating especially on atomic and inexhaustible power. In January 2012, Chinese chief Wen Jiabao visited Saudi Arabia. One of the results of this abnormal state visit was the consenting to an agreement to advance cooperation in the zone of nuclear power. The two sides consented to cooperate on the support and advancement of atomic power plants and research reactors just as the assembling and providing of atomic fuel.

During George W. Bush's 2008 visit to Riyadh, Secretary of State Condoleezza Rice and Foreign Minister Saud Al-Faisal signed a Memorandum of Understanding (MOU) in which they agreed to establish a "comprehensive framework for cooperation in the development of environmentally sustainable, safe, and secure civilian nuclear energy through a series of complementary agreements". Notwithstanding potential considerable business benefit, the United States has certain key interests in advancing participation with Saudi Arabia. A Saudi atomic program worked in collaboration with the US government and American organizations would send a solid message to Iran that full straightforwardness is the "right" approach to seek after atomic power program.

The UAE has been experiencing to some degree a macroeconomic revolution as of late, fueled by a craving to progress from the one item economy it was once so outstanding for. The introduction of a 5% VAT in 2018, substantial activity driven speculations into framework, training, social insurance and renewables among different divisions, have all added to the UAE's expanded assorted variety. This has, thus, empowered the UAE to stand the trial of sharp vacillations in oil and gas costs. As costs plunged in the most recent 'dark gold' adventure in 2018 (costs fell 30% in November), the UAE had the option to utilize its liberal financial surplus to retain the enormous piece of the stun. Its way to broadening isn't finished however; oil is as yet its greatest pay generator by a wide margin. Also, with an end goal to diminish this dependence further, it is proceeding with its push to re-characterize itself as a city of things to come by structure an "energetic, maintainable and secure business condition. To practice this arranged broadening, state supported activities, for example, the 'UAE Vision 2021' and the 'National Innovation Strategy' have been presented. These techniques are supported by a craving to change to an information based economy, with the 'Vision 2021' achieving greatness in these six national need zones:

1. World class social insurance
2. Top notch infrastructure framework
3. Manageable condition and sustainable economy
4. Firm society and security
5. Safe open and reasonable legal executive
6. Dynamic Information based economy

To catalyze the advancement of these developmental targets, the UAE government has been urging banks to expand credit action in non-oil segments while reinforcing the administrative structures of each key industry. Both of these methodologies are planned to expand business

rivalry and draw in venture. The volume of US exports and foreign direct investment into the UAE in recent years has grown dramatically and is likely to continue to grow in the future.

This growth reflects the increasingly diversified UAE economy as well as the country's leading role as a modernizing influence in the Arab world. The UAE is the United States' single largest export market in the Middle East, with more than \$19.5 billion in exports in 2018 – the tenth straight year the UAE has held this distinction. In 2012, the UAE and US partnered to form an Economic Policy Dialogue (EPD), which serves as a platform to develop initiatives that are intended to strengthen the economic, trade, and commercial relationships between the two countries.

In spite of the fact that Iran has a more drawn out history of modern advancement and capital accumulation contrasted with most other oil producing nations, its financial structure is still particularly ruled by oil. For example, this is found in the predominance of oil trades in both the parity of installments and the administration's financial incomes. Despite the fact that non-conventional exports have ascended as of late, there are up 'til now only a few indications of a noteworthy leap forward regarding genuine economic diversification. The prior policy framework of Iran has concentrated on the constancy of auxiliary shortcomings as showed in expanded oil reliance in Iran's economy. These have joined with insufficient or undecided strategy reactions in the post-revolution period featuring Iran's proceedings with financial delicacy regardless of its famous mineral wealth. These have significantly intensified oil dependency prompting a feeble and unsure speculation atmosphere, delicate open funds and an internal orientated economy for a great part of the most recent two decades.

### **Western interest in the Middle East**

As in the earlier sections of this paper, we see in almost all the major economies of the Middle East, USA is playing a great role in participating in the diversification projects especially in Saudi Arabia and UAE. Apart from these major economies, the smaller economies are having a handsome influx of foreign investment from the western economies. Kuwait and Bahrain are mostly reliable on the processing or the refined exports, but at the same time these economies receive a lot of investment in projects related to infrastructure development and opening up the finance sector to the western influence. The interest of the west or in particular USA remains very important due to two factors, the first being the shale gas reserves conservation against the exploitation due to demand and the second one is to be constantly in business with low developed economies for extracting huge profits out of investments. The prominent and most debated interest is the political interest. Politically USA has been successful in influencing all the major and strategically important countries in the Middle East due to their heavy dependence on USA for technological factors. Apart from these the war torn Middle East is one of the largest importers of the arms and ammunition in the world. Up till now, Iran remains the only major economy in the Middle East where USA has failed considerably in both, forcing them to change their foreign policy towards USA and cracking big investment deals in the country.

### **CONCLUSION**

Middle East has been since very long considered as the most rich underdeveloped region of the world. Being rich in foreign reserves due to the discovery of oil and the large scale production after the 1970s, this rich region could not match its natural wealth with technological advancements. Backwardness in education first and science and technology later led to the heavy reliance of this region on the more advanced and developed countries of the West and the

Europe. In making investments in the Middle East, the West is making huge profits. On developing the social overhead capital and infrastructure there is a lot of foreign investments. There are theories believing that in the near future the oil resources of the Middle East are going to be exhausted. The western countries especially the United States of America are very much concerned about the preservation of their resources. Moreover for USA, it is less expensive to import oil than to explore and extract its own reserves. Politically and strategically, USA wants a strong Saudi Arabia and United Arab Emirates to balance the emerging dominant power of the Islamic Republic of Iran. Sanctions and restrictions on Iran have pushed the country back at a time when USA in the form of private companies is investing a huge amount of money in the development and diversification projects in Middle Eastern countries, especially the GCC economies. Despite all this there is a notion in the air that the significance of the US – Saudi Arabia relations is going to decline once USA advances to its goal of global exporter of petroleum. But still the dominant component of the strong relation between the United States and the Gulf nations especially Saudi Arabia remains the security and other security related programs. So with all the technological advancements taking place the relation between the western countries and the Middle East is going to be a long one and are likely to endure in the coming years.

## REFERENCES

Akara, A. and Long, T. 1980. On the relationship between energy and GNP: A re-examination. *J. Energ. Dev.*, 5: 326–331

Booz & Company. 2008. *GCC Countries Has Lowest Diversification Quotients*

Bahgat, G. (2013). The Changing Saudi Energy Outlook: Strategic Implications. *The Middle East Journal*, 67(4), 565-579.

Herb, M. (2009). A nation of bureaucrats: political participation and economic diversification in Kuwait and the United Arab Emirates. *International Journal of Middle East Studies*, 41(3), 375-395.

Lewis, B. (1997). The West and the Middle East. *Foreign Aff.*, 76, 114.

Marzouk, M. S. (1990). Economic diversification and food self-sufficiency in an oil-based economy: the economics of establishing an SCP industry in Kuwait. *The Journal of Developing Areas*, 24(3), 351-366.

Rapkin, C. (1954). An Index of Economic Diversification. *Land Economics*, 30(3), 281-283.

Patrick W. Ryan, "Bilateral Civilian Nuclear Trade Talks Set to Open," Saudi-US Relations Information Service , July 29, 2011, <http://susris.sustg.org/2011/07/29/bilateral-civilian-nuclear-trade-talks-set-to->

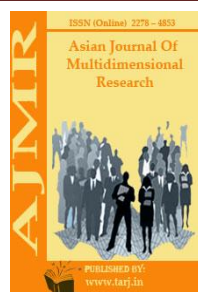
Shediac, R., Abouchakra, R., Moujaes, C. N. and Najjar, M. R. 2008. *Economic Diversification, the Road to Sustainable Development*.

Summer Said, "Saudi Arabia, China Sign Nuclear Cooperation Pact," Wall Street Journal , January 16, 2012.

<http://online.wsj.com/article/SB10001424052970204468004577>

<https://www.uae-embassy.org/uae-us-relations/key-areas-bilateral-cooperation/uae-us-economic-relationship>

<https://www.tradefinanceglobal.com/posts/how-is-the-uae-diversifying-its-economy-to-attract-investment/>



## E-GOVERNANCE INITIATIVES IN PUNJAB

**Dr. Navneet Kaur\***

\*Director (Computer),  
Punjab School Education Board,  
Mohali, Punjab, INDIA

---

### ABSTRACT

*The advantage of on-line off campus counseling is that the seat vacated by earlier candidate will be right away allotted to the next candidate in the merit, who has opted for it. In physical counseling it is allotted in the subsequent allotments, the merit candidate will be denied of his choice and the seat will be allotted to a candidate, who is lower in the merit. Punjab State E-Governance Society (PSEGS) has been identified as State Designated Agency (SDA) for facilitating implementation of CSCs scheme in Punjab<sup>1</sup>. Directorates etc. will ensure flow of regular and reliable data to producers, traders and consumers to derive maximum benefit of their sales and purchases. AGMARKNET has increased the efficiency in marketing by effecting improvement in the existing market information system.*

**KEYWORDS:** *Allotments, Facilitating, Existing*

---

### INTRODUCTION

CSCs will help bridge the technological divide between the urban and rural masses. With a view to offer an integrated set of services to the citizens, the Sukhmani Society for Citizen Services was created. Sukhmani service centres would offer citizen services pertaining to all departments under-one-roof. Sukhmani Society is a district level body that would work under the overall umbrella framework of Punjab State E-Governance Society (PSEGS). Punjab State E-Governance Society (PSEGS) has been identified as State Designated Agency (SDA) for facilitating implementation of CSCs scheme in Punjab<sup>1</sup>. All the service centers in the district would be established, managed and run by the Sukhmani Society of that district on a self-sustaining revenue model. Policies of the government with regards to Sukhmani can be deployed from a single point across the entire state consequently immensely improving the manageability, integrity and reliability of the system. Sukhmani is more than a mere technology integration project. It would serve as a mix of offline and online means to deliver the citizen services. Sukhmani is a distributed application with one of the aims to establish a very high degree of availability of the application. SUKHMANI stands for Smart, Unified, Knowledgeable, Humble / Honest, Moral, Accountable, Novel Initiative.



The objectives of SUWIDA is to provide responsive and transparent services to the citizens of the state by means of friendly and affordable interface between the Government and public. The objective is to offer citizens cost effective service at the same time improving the quality of service. On the technology side implementing technology in such a way to promote transparency, efficiency, objectivity, accountability and speed in government processes.

#### **MAIN FEATURES<sup>2</sup>:**

- All submissions of applications/requests for service(s) on a single counter.
- Linkage with backend applications. The citizen is not required to visit the branch as the status can also be made available either through WebCITI (Web-based Citizen IT Interface) or DialCITI (Dialup-based Citizen IT Interface).
- Committed date for the delivery of service. Automatic stamping of the delivery date on computer-generated receipt, based on the type of service requested.
- Monitoring by SDM for delays beyond the specified dates
- Delivery of the services from the same counter. No need to visit the branch.
- On the spot capturing of photo, wherever required; saves time and cost to the citizen.
- Acceptance of petty cash. Now citizen will not be required to visit the bank and the Treasury for paying service charges.
- Information on schemes and procedures.
- Application forms.
- Provision for on the spot delivery of services where the verification can be ensured based on the data available in district databases.

With the consolidation of state data base at SDC, successful implementation of PAWAN, and CSC, e-District project is also turning into reality. Integrated and seamless delivery of citizen services through Common Service Centres in a systematic way by district administration with the automation of workflow, backend computerization, data digitization across participating departments is the ultimate aim of the e-district project.

The Government has initiated the required steps to implement e-District project under National e-Governance Plan (NeGP), which would pave the way for integration of all the services of different departments at district level and complete workflow based backend digitization. Pilot Districts are Nawanshahr and Kapurthala.

According to the e-District guidelines, the implementation of e-District project (Phase-I) is planned over a period of eighteen months for study, development, testing and roll-out in the two pilot districts. Thereafter, Request for Proposal (RFP) would be prepared for state wide roll out for the rest of the districts in the state in the next six months.<sup>3</sup>

#### **Major IT application of Punjab is through following projects:**

##### **Objectives**

Web based counseling for admissions to all courses, is being conducted with main objectives to bring in 100% transparency in seats allotment and admissions. Government of Punjab initiative



to build a public interface to minimize travel burdens on candidates and their parents for counseling. Centralized database and centralized monitoring provides ample time to counselees for submission, change, delete, re-ordering of multiple choices from anywhere any time with paperless counseling. The advantage of on-line off campus counseling is that the seat vacated by earlier candidate will be right away allotted to the next candidate in the merit, who has opted for it. In physical counseling it is allotted in the subsequent allotments, the merit candidate will be denied of his choice and the seat will be allotted to a candidate, who is lower in the merit.

Web-based online Off-Campus Counseling for Punjab State Technical Education Board (PSBTE) has been successfully conducted this year for the admissions in all the Diploma courses in Engineering, Lateral Entry to Engineering and Pharmacy streams in all the 70 institutes across the state. Previously, all the students were required to come to PSBTE Chandigarh for the counseling spread over many days, which was a hectic exercise for both candidates as well as authorities. But web-based counseling allowing the candidates from anywhere to enter unlimited choices was a pleasant experience for the candidates. The counseling also covered polytechnics in the Chandigarh (UT) as well as central institutes at Ludhiana and Jalandhar which are governed under reservation policies of UT administration and central government respectively. In order to provide ample opportunity to the deserving candidates of different stratum, three rounds of counseling, spanning around one month in July-August, were conducted.<sup>4</sup>

#### **PRISM (Property Registration Information System Module)**

PRISM is ISO certified product which automates all major activities of Sub-Registrar office and covers deeds of Sale, Mortgage, Will, Adoption, SPA, GPA, Exchange, Pattanama / Lease, Tatima, Cancellation of SPA/GPA/Will etc. Skoch ranked PRISM ninth among all the e-governance projects in the country in 2005-06.

PRISM means complete land registration including valuation of property based on market value, capturing photographs of sellers, buyers and witnesses. Scanning of deed document, printing of endorsement based on their deeds with captured photographs, Entry module for property attributes such as Khewat, Khasra and khatoni with increased security feature have been introduced. Major features include token issuance, online capturing, storage, printing of photographs on stamp paper, valuation of property, scanning of deed documents online/offline, on the spot registration, issuance of mutation notice as Parchayadast, finalization & pendency check of deeds by SRO, single window service etc. It has been implemented in all 153 SRO offices in Punjab.

#### **i-TISP (Integrated Treasuries Information System of Punjab)**

i-TISP is an online system developed by National Informatics Center for automation of district treasuries in Punjab. Directorate of Treasuries and Accounts, is the mechanism through which effective financial control is exercised over public spending by Government. Salient features of TISP are verification of messenger and DDO by photograph and signature, online system, computerized cheque printing, linkage with budget, AG accounts & bank, tight security, Web enabled etc. Payments, receipts, pension, LOC, stamp etc are included. It has been implemented at all the District Treasuries and all Sub-Treasuries of the state. All sub-treasuries and treasuries have been linked to the state HQ.<sup>5</sup>

### **DCIS (District Courts Information System)**

Envisages the National e-Governance Plan (NeGP) Government of Punjab aims to transform the lives of citizen in the long run and bring about changes to existing government organizations, by making government-centric services available easily to citizens. One such step by the government of Punjab is the introduction of the e-Judiciary system by setting up e-Courts in the state. As part of the Mission Mode Project (MMP) under the NeGP, an attempt has been made to computerize the judicial processes. According to the plan, ICT tools will be implemented in all the courts across the state. The stakeholders in the e-Courts comprise of the citizens, lawmakers, judges, police officials, etc.

#### **Objective**

The main objective of this project is to help the judicial administration of the courts in streamlining their day-to-day operations..Also to help in reducing the cases those are pending. The focus is to fundamentally offer transparency of information to the litigants and regular access to legal judicial databases to the judges. As per NeGP e-courts mission mode project aims ICT enablement of the lower courts across the country.

Local Area Network has been established in Patiala District Court on pilot basis. Replication in other 16 Districts courts has been planned. The project, which will finally be implemented in all districts of Punjab, is being funded by the Punjab and Haryana High Court. The software for these e- courts is being developed by the National Informatics Centre. The e- courts once functional would also help litigants know the latest status of their cases..

### **CONFONET (Consumer Forums Network)–**

CONFONET is central project to computerize and to network the entire state consumer disputes redressal commissions and District consumer forums. CONFONET Computerization and networking of Consumer Forums has been implemented in district forums and state commission.

### **OAS (Office Automation Suite)**

OAS comprises of four generic and customizable modules to automate the internal processes of any government office.

### **DDMS (Diary and Dispatch Monitoring System):**

DDMS is generic solution to manage and monitor the receipt and dispatch of mail and its movement. It is implemented at a number of locations in different departments/officers

### **CCMS (Court Cases Monitoring System):**

To facilitate departments in maintaining and monitoring court cases pending in different courts (e.g. Supreme Court, High Court<sup>6</sup>, District Court, Labour Court, Consumer Court, etc)

### **CoIS (Courts Information System):**

A generic customizable solution to manage administration of the court related activities of the officers holding the courts. Specially customized version for Labour court Patiala has been under implementation to be replicated among all the labour courts.

**MMS (Meeting Monitoring system):**

MMS provides single point solution for organizing various meetings in the department. It assists in generation of agenda items, Memos for the meetings, recording of minutes, action status, etc.

**DDMS (Diary and Dispatch Monitoring System):** DDMS is generic solution to manage and monitor the receipt and dispatch of mail and its movement. It is implemented at a number of locations in different departments/officers

**MMS (Meeting Monitoring system):** MMS provides single point solution for organizing various meetings in the department. It assists in generation of agenda items, Memos for the meetings, recording of minutes, action status, etc.

**PAPMIS (Punjab Agricultural Produce Management Information System)**

Computerization<sup>7</sup> of market Committees, DMO and Mandi Board Head Office, It covers all the operations of market committees like registration of dealers, calculation of Market Fee, Recording of daily arrival, monitoring of sale & purchase etc. This software helps the market committee to transmit the data to AGMARKNET portal. Up to date information of MCs is also being transmitted to DMO and Mandi Board Head Office with the help of this software.

**AGMARKNET (Agriculture Produce Marketing Information Network)**

Whether it is domestic or overseas trade, the agricultural produce sector has been most important component of State economy. A marketing system backed by strong, adequate infrastructure is the core of agricultural marketing. An efficient agricultural marketing is essential for the development of the agricultural sector. AGMARKNET is a Central sector scheme that was launched by the Department of Agriculture and Cooperation in March 2000. The scheme aims at progressively linking important agricultural produce markets spread all over India and the State Agriculture Marketing Boards / Directorates and the DMI for effective exchange of market information. The market information network, AGMARKNET (agmarknet.nic.in), is being implemented jointly by DMI and NIC, using NICNET facilities available throughout the country. AGMARKNET facilitates market fees collection, database of dealers, Issuance of Licenses for dealers etc. Weekly prices and arrivals trends are also being disseminated using the portal. Monthly prices and arrivals bulletins are being generated using the national database. The State Agricultural Marketing Boards/Departments/Markets are collecting the desired market information and passing them to the authorities and Head office of DMI for forward dissemination. Directorate of Marketing and Inspection (DMI) has association with the State Agricultural Marketing Boards and Directorates for Agricultural Marketing Development in the country.

The Objectives of AGMARKNET is to establish a nation-wide information network for rapid collection and dissemination of market information for its proficient utilization. Computerization of data on market fee, market charges, total arrivals, arrivals by agencies, prices, storage, dispatches with destination, mode of transportation, costs, sold and unsold stocks, sources of supply with destination, method of sale, payment, weighting, grading facilities, quantities graded, market personnel, market functionaries, market finance, development programmes, infrastructure facilities, constitution/composition of Market Committee, income and expenditure and other activities of the APMCs (Agricultural Produce Market Committee), State Marketing Boards and Directorates etc. will ensure flow of regular and reliable data to producers, traders and consumers to derive maximum benefit of their sales and purchases. AGMARKNET has

increased the efficiency in marketing by effecting improvement in the existing market information system. It has reached to the unreached (farmers) thus providing them timely and reliable information for decision making and reaping the future benefits.

For easy interface with farmers and other beneficiaries a portal for AGMARKNET (<http://agmarknet.nic.in>) has been developed to serve as a single window for accessing websites of various organizations concerned with agricultural marketing. AGMARKNET has led to a nation-wide information network for speedy collection and diffusion of market information, computerization of market related information such as market fees, market charges, etc., ensuring regularity and reliability of data and increasing the efficiency in agricultural markets.

**BPIS (Bus Passes Issuance System)** is developed to facilitate the issuance of Bus Passes to the eligible applicants. BPIS has been implemented at Patiala district, and will be taken up in all the districts.

**Immigration Check Post Computerization** - Implemented at Amritsar check post.

**VC (Video conferencing)** established in all the 17 Districts and Punjab Civil Secretariat and being used by various departments of Punjab Government.

Technical/implementation support to Passport office, Central Excise & Customs, Regional Provident Fund Commissioner, Press Information Bureau, Food Corporation of India, General Post Office/Postal Life Insurance, Registrar of Companies, Director General of Foreign Trade, State PWD department for PMGSY (Pradhan Mantri Gram Sadak Yojna).

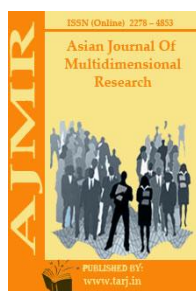
MIS for Cooperative societies, MIS of Pay Anomalies

- Census Applications (Industries, Population, Education, Agriculture etc)
- Rural Development sector (RuralSoft) Web based schemes monitoring system for DRDAs of Punjab.
- DISE (District Information System for Election) DISE is randomization software for Election Department. It handles the functionalities like formation of polling parties for Lok Sabha/Assembly Elections in a random way, election orders for individual parties, Constituency wise distribution of employees and attendance sheet for various constituencies as per Election Commission of India ECI guidelines.
- IDSP (Integrated Disease Surveillance Project) - IDSP is a central project in which NIC is supporting the department in setting up computer centre, VC cum training centre in all the districts and state office. The IDSP software would be developed centrally for implementation in the field offices.

The use of an internet is increasing day by day in the country. The Government today is facing number of challenges in the implementation of E-Governance as depicted in this paper. E-Governance can be made effective by forming the right institution and agencies and identifying the right human resources for the same. E-Governance can be effectively implemented by the efforts of adequate management and governmental expert rather than technical.

## REFERENCES

1. PSEGS, Department of IT, Government of Punjab, Chandigarh.
2. Administrative Report 2008-09, Department of Information Technology, Government Of Punjab.
3. Narinderjit Singh, *Banking on PAWAN*, Department of Information Technology.
4. National Informatics Centre, New Delhi, India.
5. Ibid.
6. JUDIS, Punjab & Haryana High Court, Chandigarh.
7. Punjab Mandi Board, Government of Punjab.



## E-BANKING KEY FOR GROWTH OF BANKING INDUSTRY

**Gurjinder Kaur\***

\*Assistant Professor,  
Department of Commerce and Business Administration,  
Guru Nanak National College Doraha,  
Ludhiana Punjab, INDIA

---

### ABSTRACT

*Technological innovations witnessed by the corporate sector during the 90's have introduced new paradigms, where technology is increasingly playing a significant role in improving the banking services. E-banking is changing the banking industry and is having the major effect on banking business. E Banking refers to the use of technology which allows customers to perform banking transactions without visiting banks. This study attempted to identify key attributes of electronic banking services. Although Speed, convenience and comfort are the major reasons for increased usages of electronic banking services. On the other hand occurrence of frauds due to ignorance in usage is a hindrance to its growth. In spite of the above disadvantages e-banking is very essential and beneficial to the common customer.*

**KEYWORDS:** *Disadvantages, Supporting, Economic, Development, Increasingly, Significant.*

---

### INTRODUCTION

A strong banking industry is very important in every country and can have a significant affect in supporting economic development through financial services. But there are several major challenges which are faced by banking industry especially after Liberalization, globalization and privatization. Traditional banking has become obsolete. Banking industry has a new paradigm. They have to compete with Private Banks. With the usage of Internet now customers are more concerned about their money value. The IT revolution had a great impact on the Indian banking system. The use of internet computers led to introduction of on-line banking in India. The use of IT in banks has reduced the scope of traditional or conventional banking with manual operations. Nowadays banks have named from disbursed to a centralized environment which shows the impart of IT on banks.



E-banking is a term, which is complete in itself and it includes all the terms like Internet Banking, Virtual Banking, On-line banking, Home banking, Phone banking, Mobile banking in itself.

## **E-BANKING**

E-banking started after Second World War with the use of proprietary software and private networks. But the whole credit of making E-banking a big hit goes to internet. Internet made E-banking trustworthy and useful. E-banking can be defined as the use of electronic delivery channels for banking products and services. It refers to the use of technology which allows customers to perform banking transactions without visiting to banks. It implies performing to customers round the clock globally through electronic media on-line banking helps consumers to overcome limitations of place and time as they can bank anywhere, any time as these services are available 24 hours a day 365 days a year without any physical limitations to space.

The concept of Internet banking has been simultaneously evolving with the development of the World Wide Web. Although the term Internet was first adopted around the year 1974, it wasn't until the 1990s that the Internet became a really universal adoption. The Internet grew incredibly throughout the 90s, and as it continued to grow, various different search engines and Web directories were created in order to assist Web browsers, as well to track pages on the Web and allow people to find things more easily. Internet banking has been around for quite a few years now, but has really only become prominent over the past year or so in particular. Internet banking is a generic term for delivery of banking services and products through electronic channels, such as internet, etc. The concept and scope of internet banking is still evolving. It facilitates an effective payment and accounting system thereby enhancing the speed of delivery of banking services considerably. E-banking or internet banking is a service feature offered by most banks these days to its customers. Using this feature a

Customer can access his account from the comfort of his home using a computer and internet connection. The customer can check his balance or print statements or even transfer money to another account using this service.

Basically Internet banking is a form of banking that takes place entirely online. So rather than going to your nearest bank branch to complete all of your banking tasks, you simply logon to your bank account online, as long as you have access to a computer and the Internet, and with the simple click of a mouse you are able to get everything done, from transferring money between accounts and paying bills, to checking account balances and applying for loans. The purpose of online banking is not to change or even alter your money habits, but rather the point is to use today's incredibly advanced computer technology to give you the option of bypassing the regular, time-consuming paper-based aspects of traditional banking and offer you ease and peace of mind Compared with the traditional channels of offering banking services(such as accepting deposits of customers, providing loans to them and various other banking services) through physical branches, E-banking uses the internet to deliver traditional banking services to their customers, such as opening accounts, transferring funds, and electronic bill payment

### **What is E-Banking?**

E\_banking is a generic term for delivery of banking services and products through electronic channels, such as internet, etc. The concept and scope of internet banking is still evolving. It facilitates an effective payment and accounting system thereby enhancing the speed of delivery

of banking services considerably. E-banking or internet banking is a service feature offered by most banks these days to its customers. Using this feature a customer can access his account from the comfort of his home using a computer and internet connection. The customer can check his balance or print statements or even transfer money to another account using this service.

Basically Internet banking is a form of banking that takes place entirely online. So rather than going to your nearest bank branch to complete all of your banking tasks, you simply logon to your bank account online, as long as you have access to a computer and the Internet, and with the simple click of a mouse you are able to get everything done, from transferring money between accounts and paying bills, to checking account balances and applying for loans. The purpose of online banking is not to change or even alter your money habits, but rather the point is to use today's incredibly advanced computer technology to give you the option of bypassing the regular, time-consuming paper-based aspects of traditional banking and offer you ease and peace of mind.

### **DEVELOPMENT OF E-BANKING**

ICICI was the first bank to initiate the internet banking revolution in India as early as 1997 under the brand name 'Infinity'.

ICICI Bank kicked off online banking way back in 1996. But even for the Internet as a whole, 1996 to 1998 marked the adoption phase, while usage increased only in 1999-due to lower ISP online charges, increased PC penetration and a tech-friendly atmosphere.

### **Levels of Banking Services Offered through Internet**

Broadly, the levels of banking services offered through INTERNET can be categorized into three types:

- The Basic Level Service is the banks' websites which disseminate information on different products and services offered to customers and members of public in general. It may receive and reply to customers' queries through e-mail,
- In the next level are Simple Transactional Websites which allow customers to submit their instructions, applications for different services, queries on their account balances, etc, but do not permit any fund-based transactions on their accounts,

The third level of Internet banking services are offered by Fully Transactional Websites which allow the customers to operate on their accounts for transfer of funds, payment of different bills, subscribing to other products of the bank and to transact purchase and sale of securities, etc. The above forms of Internet banking services are offered by traditional banks, as an

Additional method of serving the customer or by new banks, who deliver banking services primarily through Internet or other electronic delivery channels as the value added services. Some of these banks are known as 'virtual' banks or 'Internet only' banks and may not have any physical presence in a country despite offering different banking services

### **Features of E- Banking**

Today most national banks offer at least some form of online banking, and so if you are not involved with online banking already, you should determine whether or not your bank even offers these services, and most likely they do. It has the following features:

1. It removes the traditional geographical barriers as it could reach out to customers of

different countries / legal jurisdiction. This has raised the question of jurisdiction of law / supervisory system to which such transactions should be subjected.

2. It has added a new dimension to different kinds of risks traditionally associated with banking, heightening some of them and throwing new risk control challenges.
3. Security of banking transactions, validity of electronic contract, customers' privacy, etc., which have all along been concerns of both bankers and supervisors have assumed different dimensions given that Internet is a public domain, not subject to control by any single authority or group of users.

### Types

Basically there are two different methods through which Internet banking can be conducted: a personal computer and wireless technology. Most people use a personal computer to conduct their online banking tasks, however there are many people that opt to instead complete banking services via wireless technology, for instance through a PDA or cell phone.

### The Regulatory and Supervisory concerns in E- banking

The Regulatory and Supervisory concerns in I-banking arise mainly out of the distinctive features outlined above. These concerns can be broadly addressed under three broad categories, viz, Legal and regulatory issues (ii) Security and technology issues and (iii) Supervisory and operational issues.

- I) legal issues cover those relating to the jurisdiction of law, validity of electronic contract including the question of repudiation, gaps in the legal / regulatory environment for electronic commerce. On the question of jurisdiction the issue is whether to apply the law of the area where
  - II) access to Internet has been made or where the transaction has finally taken place. Allied to this is the question where the income has been generated and who should tax such income. There are still no definite answers to these issues.
  - III) **Security of E-banking** transactions is one of the most important areas of concerns to the regulators. Security issues include questions of adopting internationally accepted state of-the art minimum technology standards for access control, encryption/ decryption minimum key length etc), firewalls, verification of digital signature, Public Key Infrastructure (PKI) etc. The regulator is equally concerned about the security policy for the banking industry, security awareness and education.
  - IV) **The supervisory and operational issues** include risk control measures, advance warning system, Information technology audit and re-engineering of operational procedures. The regulator would also be concerned with whether the nature of products and services offered are within the regulatory framework and whether the transactions do not camouflage money-laundering operations.

### RBI & E-Banking

The Reserve Bank of India constituted a working group on internet Banking. The group divided the internet banking products in India into 3 types based on the levels of access granted. They are:-

1. Information Only System:

2. Electronic Information Transfer System:

3. Fully Electronic Transactional System

**Information Only System:**

Interest rates, branch location, bank products and their features, loan and deposit calculations are provided in the banks website. There exist facilities for downloading various types of application forms. The communication is normally done through e-mail. There is no interaction between the customer and bank's application system. No identification of the customer is done. In this system, there is no possibility of any unauthorized person getting into production systems of the bank through internet.

- **Electronic Information Transfer System:** The system provides customer- specific information in the form of account balances, transaction details, and statement of accounts. The information is still largely of the 'read only' format. Identification and authentication of the customer is through password. The information is fetched from the bank's application system either in batch mode or off-line.
- **Fully Electronic Transactional System:**

This system allows bi-directional capabilities. Transactions can be submitted by the customer for online update. This system requires high degree of security and control. In this environment, web server and application systems are linked over secure infrastructure. It comprises technology covering computerization, networking and security, inter-bank payment gateway and legal infrastructure.

**Reserve bank of India's Concern about Issues in Internet Banking**

The Central Bank may have its concern about the impact of Internet banking on its monetary and credit policies. As long as Internet is used only as a medium for delivery of banking services and facilitator of normal payment transactions, perhaps, it may not impact monetary policy.

**Constitution of the Working Group:**

In the above background Reserve Bank of India constituted a Working Group to examine different issues relating to I-banking and recommend technology, security, legal standards and operational standards keeping in view the international best practices. The Group is headed by the Chief General Manager-in-Charge of the Department of Information Technology and comprised experts from the fields of banking regulation and supervision, commercial banking, law and technology. The Bank also constituted an Operational Group under its Executive Director comprising officers from different disciplines in the bank, who would guide implementation of the recommendations.

**Terms of Reference**

The Working Group, as its terms of reference, was to examine different aspects of Internet banking from regulatory and supervisory perspective and recommend appropriate standards for adoption in India, particularly with reference to the following:-

- Risks to the organization and banking system, associated with Internet banking and methods of adopting International best practices for managing such risks.
- Identifying gaps in supervisory and legal framework with reference to the existing

banking and financial regulations, IT regulations, tax laws, depositor protection, consumer protection, criminal laws, money laundering and other cross border and suggesting improvements in them.

- Identifying international best practices on operational and internal control issues, and suggesting suitable ways for adopting the same in India.
- Recommending minimum technology and security standards, in conformity with international standards and addressing issues like system vulnerability, digital signature, information system audit etc.
- Clearing and settlement arrangement for electronic banking and electronic money transfer; linkages between I-banking and e-commerce.
- Any other matter, which the Working Group may think as of relevance to Internet banking in India

### **Objectives of E-banking**

1. Widen the range of services.
2. Attract more customers.
3. Retain the customers.
4. Face the competition.
5. Customer delight

### **DIMENSIONS**

1. customer to E-banking
2. Bank to bank E-banking
3. Central E-banking
4. Intranet Procurement.

### **E-banking transactions**

1. Electronic fund transfer (ETF)
2. Electronic clearing system (ECS)
3. Credit card
4. Pay bills
5. Railway Bookings
6. Shopping
7. Investment through Internet Banking

### **Delivery Channels**

1. **ATMS (Automatic Teller Machines):-** ATM card is a device that allows customer who has an ATM card to perform routine banking transaction at any time without interacting with

human teller. This service helps the customer to withdraw money even when the banks are closed. This can be done by inserting the card in the ATM and entering the personal Identification number and secret password. It allows the customers to transfer money to and from accounts.

2. **Internet Banking:** - It is the latest in the services of technological wonders in the recent involving use of internet for delivery of banking provides world wide connectivity and direct customer control of international movement of funds.
3. **Mobile Banking:** - Mobile banking is a term used for performing balance checks, account transactions, payments etc via-a mobile device such as a mobile phone.
4. **Tele Banking:** - It refers to banking on phone services. A customer can access information about his/her account through a telephone call and by giving the loaded PIN to the bank. It is user friendly.
5. **Credit Card:** - It can be defined as a small plastic card that allows its holder to buy goods and services on credit and to pay at fixed intervals through card issuing agency. It releases the customers from botheration of carrying cash and ensures safety.
6. **Electronic fund Transfer:** - In 1996, RBI devised an EFT System to facilitate fast transfer to funds electronically. The funds can be transferred between any two bank accounts even if the sender and receiver are located at different citie s or deal with different banks.

#### **Advantages of E-Banking**

1. **Convenient.** Compared to a conventional bank, internet banking can be done in the comfort of your home or office. While situated in just one place facing your computer or laptop.
2. **One-stop shop.** With an online bank, you can conduct 95 percent of your business on the internet. Apart from accessing your account information and bank statements, you can pay your bills.
3. **Cost effective.** Online banking enables you to enjoy big savings. Most banks normally charge fewer fees when you use their internet banking services.
4. **Safe and secure.** Banks With online presence provide top security to protect their consumers. They use the latest encryption technology to prevent fraudulent activities such as phishing and identity theft.
5. **High interest rates.** If you're resourceful enough, you just may find a good online bank that offers higher interest rates than those offered by the standard banks. There are direct banks or those that purely do business on the internet offering high savings rate.

#### **Benefits from E-banking to customers**

1. Quick and steady access to information.
2. E-banking services help in increasing profits.
3. On-line purchase of goods and services and payments can be made for various purposes.
4. It leads to the growth of global and local clientele base with the development of E-banking.
5. The customer can view his account balance can get a statement of his account, can apply for loans. Check the progress of investments review interest rates.



6.E-banking provides 24 hours service to the customers for cash withdrawal from any branch.

### **Benefits to Banks**

1. E-banking services help to increase profits
2. E-banking websites can act as a revenue earner through its promotional activities.
- 3.E-banking provides competitive advantage with boundary less network to the banks

### **Disadvantages of Internet Banking**

Internet banking services provide a number of benefits to consumers. But while it has its advantages, customers wishing to join the trend need to know its disadvantages as well.

1. **Impersonal.** Doing transactions on the internet can be very impersonal. In other words, you only do business with the use of a computer. No individual to receive and check your money or correct some wrong information that you might have written on a certain form..
2. **Lack of trust.** Let's face it; many people still don't trust the internet. For the new users who have performed financial transactions for only a few times, they may still have this doubt whether or not they did the right thing such as clicked the right button and so on.
3. **Difficult for first timers.** For a first time user, navigating through a website of an internet bank may be hard and may take some time. Opening an account could also take time as some sites ask for numerous personal details including a photo identification which can inconvenience the potential customer.
4. **Security fraud.** Many people shy away from internet banking because of the security threat. They can't help but worry about this aspect what with news on fraudulent bank transactions that pop up every now and then. However, this should not be a problem as banks that provide internet banking services prioritize security above anything else. Since they value their customers, they always use the most advanced security technology in protecting their websites. In addition, the Federal Deposit Insurance Corporation (FDIC) is also standing behind them.

1. List of Banks Providing E-Banking Services
2. State Bank of India and its subsidiaries
3. Allahabad bank
4. Bank of Baroda
5. Bank of India
6. Andhra Bank
7. Bank of Maharashtra
8. CANARA Bank
9. Central Bank of India
10. Dena Bank
11. Oriental Bank Of Commerce
12. PNB

13. UCO Bank
14. Syndicate Bank
15. Union bank Of India
16. United Bank Of India
17. ICICI Bank
18. HDFC Bank
19. VIJAYA Bank
20. KOTAK Mahindra Bank
21. INDUSLAND Bank
22. Yes Bank
23. Axis Bank
24. City Union bank
25. J&K Bank

**Near about 50 banks of Public Sector(Old and New Banks), Private Sector(Old and New Banks), Nationalized Banks providing E-Banking services.**

### **Emerging Challenges**

Information technology analyst firm, the Meta Group, recently reported that "financial institutions who don't offer home banking by the year 2000 will become marginalized." By the year of 2002, a large sophisticated and highly competitive Internet Banking Market will develop which will be driven by

- Demand side pressure due to increasing access to low cost electronic services.
- Emergence of open standards for banking functionality.
- Growing customer awareness and need of transparency.
- Global players in the fray.
- More convenient international transactions due to the fact that the Internet along with general deregulation trends eliminates geographic boundaries.
- Move from one stop shopping to 'Banking Portfolio' i.e. unbundled product purchases.

### **Customer's perception towards E-banking**

Today the customer is more knowledgeable, demanding and aware of his rights. It is therefore a challenging task before the banking sector to revisit their entire working modules, up gradation of skills, technology and policies so that they are competent to withstand the competitive environment in future, despite introduction of so many innovative E-banking products by various banks. The customers are still care apprehensive of undertaking E banking transactions. Especially the older generation and the illiterate. Banks have to undertake a lot of customer education to remove the fears of banking and attract them to utilize the E-banking products in full swing.

### **Risks Associated with E-banking**

1. **Legal Risk:** - These risks arise from violation or non-obeying of law, rules, regulations and ethical standards.
2. **Security Risks:** - This risk arises out of lack of information regarding security process. There are breaches with serious criminal Intent i.e. fraud, theft of commercially sensitive.
3. **Technology risks:** - The risks which arise due to adverse outcome damage, loss of information and interruption of use of computer, hardware, software, electronic devices, networks etc. are called technology risks.
4. **Operational risks:** - It arises from fraud, errors, negligence, system trouble, inability to deliver services.
5. **Strategic Risk:** - Strategic risk means risk which arises due to adverse business divisions, improper implementation of decision or lack of responsiveness to changes in industry. This has present and future impact on earnings of bank.

To manage above risks, customer education is required to minimize risks that enable customer security. From this point of view central Bank has given valuable suggestions like using of multiple channels. Such as websites, messages, direct communication by staff etc.

### **Managing Of E-Banking Risks**

1. In this context internal audit and control is required to the licensee. in addition to that the board or committee should take all possible steps to modify the control systems as and when necessary to cope with E-banking risks.
2. The decision of management should ensure lowering of cost of operations improvement or sustainability of competitive position and increase revenue opportunities. At the same time management team should decide how much is to be invested for security and controls, computer system and network.
3. To protect the information and to respond to problems like unauthorized access to vital information appropriate networking, security expertise and powerful software tools are required.
4. Employment of skillful staff provides support and enables marketing of E-banking services.

### **CONCLUSION**

E-banking technologies have proliferated in recent years and the availability of a wide range of products has led to increasing adoption among consumers. All businesses including small and medium scale industries no matter their geographical locations are all beneficiaries of E-banking. It encompasses all kinds of commercial transaction that is conducted on an electronic medium mostly through the internet. For mitigation of various strategic, operational, security and loyal and reputational risks. It is suggested that the periodic training of the users should be an integral component of implementing E-banking services. So to conclude, we can say that Internet banking offers an array of different advantages to the user, including: account balances and history including year-to-date information, the ability to transfer money from one account to another and to payees for bill payments, check history, reorders, and stop payments, check credit card balances and statements, complete online loan applications, secure interactive messaging with staff, and much more. The forecast is positive for online banking as it's expected to grow by 55 percent to 72 million homes by 2011.

The Forrester Research report said this type of banking service is targeted to the Generation Y customers or those born in the late 1970s. Financial analysts agree that the online bank services are indeed having a great influence in the market place. But while all these interesting features look great, consumers should be wary in choosing a bank that offers an online banking service. Doing some research is the right step towards learning all about internet banking and the reputable online banks in existence today.

**REFERENCES:**

1. Report on internet Banking,RBI
2. Rahman M (2003), Present status of E-banking in INDIA, journal of the Ins. of bankers india.
3. [<http://www.banking.about.com>]
4. <http://www.ilp.law.com>
5. <http://www.banktechindia.com>
6. Ruby Shukla and Pankaj Shukla(2011),"E-banking Problems and

## Editorial Board

**Dr. SS Narta**

Professor  
Department of Commerce,  
Himachal Pradesh University,  
Summerhill, Shimla – 171005,  
H.P., India.

**Dr. Mamta Mokta**

Professor  
Department of Public Administration,  
Himachal Pradesh University,  
Shimla, India.

**Prof. Shyam Lal Kaushal**

School of Management Studies  
Himachal Pradesh University,  
Shimla, India.

**Dr. Durgesh Nandini**

Associate Professor  
Department of Public Administration,  
IGNOU, Delhi, India.

**Dr B. Mohan**

Associate Professor in English  
S.V. College of Engineering and Technology  
Chittoor, Andhra Pradesh, India.

**Dr. Dalbir Singh**

Assistant Professor  
Haryana School of Business,  
G.J.U.S & T, Hisar,  
Haryana, India.

**Dr. Sonia Sharma Uppal**

P.G. Department of Commerce and Management  
Arya College, Ludhiana,  
India.

**Nadeera Jayathunga**

Senior Lecturer  
Department of Social Sciences  
Sabaragamuwa University, Belihuloya  
Sri Lanka

**Mrs. Sabina Dinesh Kumar**

Assistant Lecturer  
Faculty of Management Studies & Comm.  
University of Jaffna,  
Sri Lanka

**Jumana M. Elhafiz**

Assistant Professor  
Department of Biochemistry,  
Shendi University, Ministry of Health,  
Sudan

**Dr. Sunil Kumar**

Assistant Professor,  
Punjab School of Economics,  
Guru Nanak Dev University,  
Amritsar, Punjab, India

**Dr. Ebele P. ifionu**

Faculty, Department of Finance and Banking  
University of Port Harcourt, Nigeira

## Review Process

Each research paper/article submitted to the journal is subject to the following reviewing process:

1. Each research paper/article will be initially evaluated by the editor to check the quality of the research article for the journal. The editor may make use of iThenticate/Viper software to examine the originality of research articles received.
2. The articles passed through screening at this level will be forwarded to two referees for blind peer review.
3. At this stage, two referees will carefully review the research article, each of whom will make a recommendation to publish the article in its present form/modify/reject.
4. The review process may take one/two months.
5. In case of acceptance of the article, journal reserves the right of making amendments in the final draft of the research paper to suit the journal's standard and requirement.



## Categories

- Business Management
- Social Science and Humanities
- Education
- Information Technology
- Scientific Fields



## Published by

### Trans Asian Research Journals

SCO 34, 1st Floor, HUDA Market,  
Near Red Cross, Jagadhri - 135 003 (Haryana) INDIA  
Website : [www.tarj.in](http://www.tarj.in)

Our other publications :

Trans Asian Journal of Marketing & Management Research (TAJMMR)  
ISSN (online) : 2279-0667