
Effectiveness of ICT Programme on Teacher Self-Efficacy (TSE) among Pre-service Teacher Educators

Hemant Lata Sharma*

Leena Sharma**

Abstract

The rapid development of Information and Communication Technology (ICT), particularly the Internet, is one of the most exciting developments of the Information Age. Today Information and Communication Technologies (ICT) is being used as a tool for improving the quality of life by improved efficiency and enhanced effectiveness. Teachers' perceptions of self-efficacy are oriented to their understanding of education that changes and develops depending on the technology. In present study the researcher has made an attempt to investigate the effectiveness of ICT Programme on Teacher Self-Efficacy among Pre-service Teacher educators. For this purpose, the TSE Scale by Albert Bandura 1997 was adapted in Indian conditions. A sample of 90 pre-service teacher educators studying in Haryana Institute of Education, Bahadurgarh (Haryana) participated in the study. It has been found that ICT Programme positively affected the Teacher self-Efficacy (TSE) of pre-service teacher educators. In this regard, Effect Size, Variable Importance and Decision Tree were also made.

Keywords: ICT Programme, Teacher Self-Efficacy, Pre-service Teacher Educators.

1.1 Introduction

"ICT is a generic term referring to technologies which are being used for collecting, storing, editing and passing on information in various forms. A personal computer is the best known example of the use of ICT in education, but the term multimedia is also commonly used. Multimedia can be expounded as a combination of data carriers, for example video, CD-ROM, floppy disc, internet and software in which the probability for an interactive approach is offered. ICT is used for communication between students and teachers, in which internet, laptops and simulation are being used and as a result a variety of learning environments are possible. Teacher-centred and whole-class instruction is no longer the dominant teaching method" (Sharma & Sharma, 2018; Sharma & Madan, 2018).

1.2 Teacher Self-Efficacy

The theoretical foundation of Self-Efficacy is found in Social Cognitive Theory, developed by former American Psychological Association's president (1974) and Stanford professor Albert Bandura (1977-1997). The term 'self-efficacy' is a common subject of psychological studies and tends to be used as a short hand for the beliefs that human beings have in their own ability and capacity to take action and succeed. The concept of self-efficacy is not a straightforward one (Tschannen- Moran, and Woolfolk Hoy, 2001). It is however an essential part of a theory of human development, the most prominent exponent of which is Albert Bandura. Social Cognitive Theory assumes that people are capable of human agency or intentional pursuit of courses of action, and that such agency operates in

* Professor, Department of Education, Faculty of Education, M.D.University, Rohtak

** Research Scholar, Department of Education, M.D.University, Rohtak

a process called triadic reciprocal causation. Reciprocal causation is a multi-directional model suggesting that our agency results in future behaviour as a function of three interrelated forces: a) Environmental Influences; b) Behaviour and c) Internal Personal Factors such as cognitive, affective and biological processes.

Consistent with the general formulation of self-efficacy, Tschannen-Moran and Woolfolk Hoy (2001) defined "Teacher Self-efficacy as a teacher's "judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated". The study of Teacher Self-efficacy is a little over two decades old and began with RAND researchers' evaluation of whether teachers believed that they could control the reinforcement of their actions or not. Teacher self-efficacy cannot be easily defined, because teaching is complex and constantly evolving, and self-efficacy involves a great many traits and factors. Ashton argued that the teacher influences students, and that the intensity and ability of teachers represents their self-efficacy. Teacher Self-Efficacy includes three aspects: 1) Teaching effectively; 2) Learning abilities and 3) Professional knowledge.

Sherman and Howard (2012) further emphasize the importance of teachers' belief for making decisions to integrate ICT in their educational activities. However, merely encouraging teachers to use ICT in daily educational practices does not realize ICT integrated education. The several internal factors of teachers should be considered, such as knowledge and skills, self-efficacy, and belief in its pedagogical value. Ertmer and Ottenbreit-Leftwich (2010) stress that having knowledge and skills is not enough to change teachers' behaviour, unless they feel confident to facilitate student learning through those gained ICT knowledge and skills. They further claim that Teacher Self-Efficacy may be more important factor to implement technology in their classrooms. For these reasons, enhancing teachers' self-efficacy, especially ones related to ICT use, can play important roles to bring about the change in the education practice.

Formulating research objectives in an appropriate manner is one of the most important aspects of any study. This is because research objectives determine the scope, depth and overall direction of the research. Research objectives divide the aim into several parts and address each part separately. In order to achieve the aim 'Effectiveness of ICT Programme on Teacher Self-Efficacy (TSE) among Pre-service Teacher Educators' following objectives were framed which would facilitate the achievement of the research goal.

1.3 Objectives of the Study

1. To compare the pre-test mean scores of control and experimental group with respect to their Teacher Self-Efficacy (TSE).
2. To compare the post-test mean scores of control and experimental group with respect to their Teacher Self-Efficacy (TSE).
3. To compare the mean gain scores of control and experimental group with respect to their Teacher Self-Efficacy (TSE).
4. To find the Effect Size of ICT on Teacher Self-Efficacy (TSE) of pre-service teacher educators of both experimental (E) and control (C) group after experimental treatment.
5. To find Variable Importance of Teacher Self-Efficacy (TSE) of pre-service teacher educators after experimental treatment.
6. Development of Decision Tree and Interpretation of results of Teacher Self-Efficacy (TSE) of pre-service teacher educators after experimental treatment.

1.4 Hypotheses of the Study

1. There exists no significance difference in pre-test mean scores of control and experimental group with respect to their Teacher Self-Efficacy (TSE).
2. There exists no significance difference in post-test mean scores of control and experimental group with respect to their Teacher Self-Efficacy (TSE).
3. There exists no significance difference in mean gain scores of control and experimental group with respect to their Teacher Self-Efficacy (TSE).

2. Methodology

2.1 Method of Research: The investigator used **Experimental Method** of research to conduct this study.

2.2 Design of the Study: In the present study, **Non Randomized Control Group Pre-test Post-test Quasi Experimental Design** was used with a purposive sample in the form of intact sections of B.Ed. class of the same college of Education.

2.3 Variables Involved: The dependent variables or the criterion variables for this study is **Teacher Self-Efficacy (TSE)**. **Information and Communication (ICT) Programme named ICT-Enabled Instructional Package (ICT-EIP)** is independent variable, which is being manipulated to study its effect on Teacher Self-Efficacy (TSE).

2.4 Population and Sample: In the present study Pre-service Teacher Educators of Jhajjar district studying in Teacher Training Institutes will constitute the population.

In the present study 90 pre-service teacher educators (45 in control group and 45 in experimental group) studying in two sections of Haryana Institute of Education, Bahadurgarh (Jhajjar) were taken as sample.

2.5 Tools Used: Teacher Self-Efficacy (TSE) Scale developed by Albert Bandura (1997) was adapted by the investigator in Indian Conditions. A 9-point Likert Scale is taken in the test. There are 9 choices for each item out of which only one has to be chosen; which are varying from nothing (1), very Little (2,3), Some Influence (4,5,6), quite a bit (7,8) to a Great Deal (9). There are total 38 items in the scale. Each item response is scored with a value of 1 for nothing, to all the way to 9 For a Great deal. For each construct the participants' responses are averaged. Firstly, all items relating to different domains were framed. The initial draft contained 43 items. It was administered on a sub sample of 110 pre-service teacher educators. On the basis of Item Analysis no item was rejected and the suggestions of experts were incorporated accordingly. The draft thus contained the same 43 items. The scale then exposed to a sample of 400 pre-service teacher educators. After Item analysis, Total Correlation and Exploratory Factor Analysis 05 items were deleted. The final selected set thus contained 38 items. The final draft of the scale was administered to 400 pre-service teacher educators selected from Rohtak and Jhajjar district of Haryana by following random purposive Sampling technique. For Internal Consistency, Cronbach's Alpha was calculated which was found to be .983. The Factorial Validity of the scale was also determined by factor analysis. The scale accounted for 74.641% of the total variance with their Eigen Values being greater than unity. The time for completing the whole test was 25 minutes only. Each item response is scored from 1 to 9. For each construct, participants' responses are averaged. The averaged score of each construct is then added up to give the final score of Teacher Self-Efficacy (TSE) Score.

2.6 Statistical Techniques Used: Mean, Median, SD, t-test were employed for analysis and interpretation of data.

3.Results & Discussion

Objective- 1, 2 & 3 To Compare the Pre-test, Post-Test and Mean Gain Scores of Control and Experimental Group with respect to their Teacher Self-Efficacy (TSE)

To test the hypothesis that TSE score of control group (M=20.9406, SD= 1.9046) and TSE score of experimental group (M= 21.2768, SD= 2.1048) were equal before experimental treatment, a t-test was performed. Prior to conducting the analysis, the assumption of normally distributed difference score of TSE was examined. All the assumptions were considered satisfied. It was also be noted that the $t(44) = 1.471, p > 0.05$. Thus the null hypothesis that “There exists no significant difference between TSE scores of control and experimental group before experimental treatment” was retained. Which means the control and experimental group were same with respect to the TSE scores before the experimental treatment. To test the hypothesis that TSE scores of control group (M=14.9409, SD= 2.9084) and TSE scores of experimental group (M= 53.9070, SD= 1.8186) were equal after experimental treatment, a t-test was performed. Prior to conducting the analysis, the assumption of normally distributed difference score was examined. All the assumptions were considered satisfied. It was also be noted from the table that the $t(44) = 80.225, p < 0.01$. Thus the null hypothesis that “There exists no significant difference between TSE scores of control and experimental group after experimental treatment” was rejected. Which means the control and experimental group differ significantly with respect to TSE Score after experimental treatment. To test the hypothesis that mean gain score of TSE control group (M= -5.999, SD=3.3325) and TSE experimental group (M= 32.6301, SD= 2.7723) were equal after experimental treatment, a t-test was performed. Prior to conducting the analysis, the assumption of normally distributed difference score was examined. All the assumptions were considered satisfied. It was also be noted from the table that the $t(44) = 70.291, p < 0.01$. Thus the null hypothesis that “There exists no significant difference between mean gain scores of TSE of control and experimental group after experimental treatment” was rejected. Which means the control and experimental group differ significantly with respect to mean gain scores of TSE after experimental treatment.

Table-1: t-values for Pre-test, Post-Test and Mean Gain Scores of TSE of Experimental and Control Group of Pre-service Teacher Educators

	Group	N	Mean	S.D.	t-value	p-value (sig. Value)
Objective-1 (Pre-test)	Total TSE (C)	45	20.9406	1.9046	1.471	.148
	Total TSE (E)	45	21.2768	2.1048		
Objective-2 (post-test)	Total TSE (C)	45	14.9409	2.9084	80.225	.000
	Total TSE(E)	45	53.9070	1.8186		
Objective-3 (Mean Gain)	Total TSE (C)	45	-5.9996	3.332	70.291	.000
	Total TSE (E)	45	32.6301	2.7723		

The findings are supported by Mishne, Jenith (2012) who revealed that Technology Knowledge was a statistically significant predictor of Teacher Self-Efficacy. The findings of Adams, Susan Christine (2016) publicized that Tech Buddy Program is a viable option for increasing comfort and self-efficacy levels of ICT integration into curriculum. The above findings are in accordance with Wells (2000) who revealed that high users of technology were found to have higher sense of teacher self-efficacy. Anderson (2012) also showed that the self-efficacy of professional development in teaching was found to be positively correlated with the integration of technology. Further from the above finding it was found that there exists a negative mean gain of control group (before and after experimental treatment). This finding is also supported by Burton (1996). He revealed that there exists a statistically significant negative correlation between the use of instructional methods (without computers) and teacher self-efficacy. He further added that two-third of the teachers did not use computers during instructions. Therefore, it is safe to conclude that the sense of teacher self-efficacy gets lower in the absence of integration of technology during instruction.

Objective-4 Effect Size of ICT-EIP on TSE Scores of Experimental and Control Group of Pre-service Teacher Educators

“Effect Size is a straightforward method for measuring the difference between two groups that has much recompense over the utilization of some treatment of statistical significance alone. Effect size underlines the extent of the difference as contrary to significant difference only. It is easy to understand and comprehended and can be connected to any deliberate result in Education or Social Science. It is especially significant for evaluating the efficacy of a specific intervention (treatment), in respect to some experimentation. Effect size is a standardized, scale free measure of the relative size of the impact of an intervention (treatment). Understandings of Effect size for the most part relies upon the suppositions that “control” and “experimental” group values are normally distributed. Cohen (1969) depicts an impact size of 0.2 as 'little'; an impact size of 0.5 is portrayed as "medium" and is 'sufficiently substantial to be noticeable to the bare eye'. Cohen further portrays an effect size of 0.8 or more noteworthy as ‘largely noticeable’ and hence magnanimous” (Sharma & Sharma, 2018).

Table-2: Effect Size of ICT-EIP on TSE Scores of Experimental and Control Group of Pre-service Teacher Educators after Experimental Treatment

Group	N	Mean	S.D.	d-value or Effect Size	Type of Effect
Total TSE (C)	45	14.9409	2.9084	11.959	Large
Total TSE (E)	45	53.9070	1.8186		

From the above table, it is clear that the effect size is 11.959 which is large enough to be statistically and educationally significant as prescribed by Cohen, 1969. This is because the pre-service teacher educators in experimental group were exposed to ICT-EIP which in turn poured confidence in them and hence increased their teacher self-efficacy. An effect size greater than 3 is helpful in predicting that almost 99% of control group pre-service teacher educators would be below the average pre-service teacher educators in experimental group. So, it can be safely concluded that all the pre-service teacher

educators in control group were below to the average pre-service teacher educators in experimental group.

Objective-5 Variable Importance of TSE of Pre-service Teacher Educators

“A data set can contain a large number of predictors. Some predictors are useful for predicting the response variable, and others are not. Variable importance is an indication of which predictors are most useful in predicting the response variable. The variable importance percentage reflects the contribution of each variable in predicting the target variable” (Sharma & Sharma, 2018).

Table-3: Variable Importance of TSE of Pre-service Teacher Educators after Experimental Treatment

Variable	R-square	Df	F-value	p-value	Variable Importance
Decision Making Efficacy	0.441022	1	33.92605	<.0001	44%
Efficacy to Create Positive Institutional Climate	0.329998	1	60.52881	<.0001	33%
Disciplinary Self-Efficacy	0.108816	1	37.12788	<.0001	11%
Efficacy to Parental Involvement	0.071314	1	58.39304	<.0001	7%
Efficacy to Community Involvement	0.016426	1	19.75752	<.0001	2%
Instructional Self-Efficacy	0.020145	1	62.33718	<.0001	2%
Efficacy for Motivation	0.01228	1	.	.	1%
Total TSE					100%

From above table, it is clear that Decision Making Efficacy (DM) is the most significant in predicting the Total Teacher Self-Efficacy (target variable). It has a variable importance of 44%. Also, it can be interpreted from the same table that Efficacy for Motivation (EM) is the least significant predictor of Total Teacher Self-Efficacy. The variable importance of all the predictors of Total Teacher Self-Efficacy in descending order is as follows:

Decision Making Efficacy (44%) > Efficacy to Create Positive Institutional Climate (33%) > Disciplinary Self-Efficacy (11%) > Efficacy to Enlist Parental Involvement (7%) > Efficacy to Enlist Community Involvement (2%) > Instructional Self-efficacy (2%) > Efficacy for Motivation (1%)

Objective-6 Development and Interpretation of Results from Decision Tree of Teacher Self-Efficacy (TSE) at Post-test Stage

A decision tree is a choice help instrument that uses a tree-like diagram or model of choices and their conceivable results, including chance occasion results, asset expenses, and utility. It is one approach to show an algorithm. Another utilization of decision trees is as an unmistakable means for ascertaining contingent probabilities. Among decision support instruments, decision trees have a few points of interest. Choice (decision) trees are easy to comprehend and translate. Individuals can comprehend decision tree models after a concise clarification. They have esteem even with minimal hard information. Choice (Decision) trees are a straightforward, however of an intense type for multiple variable analysis. Decision trees are delivered by calculations that recognize different methods for part an informational index into branch-like sections. These sections frame a rearranged decision tree that begins with a root hub at the highest point of the tree. Both

quantitative and subjective information can be suited in choice tree development. Choice trees transform crude information into an expanded learning and they empower you to convey the learning in a straightforward, yet effective arrangement of comprehensible standards. Decision Tree of Teacher Self-Efficacy (TSE) at Post-test Stage is shown below:

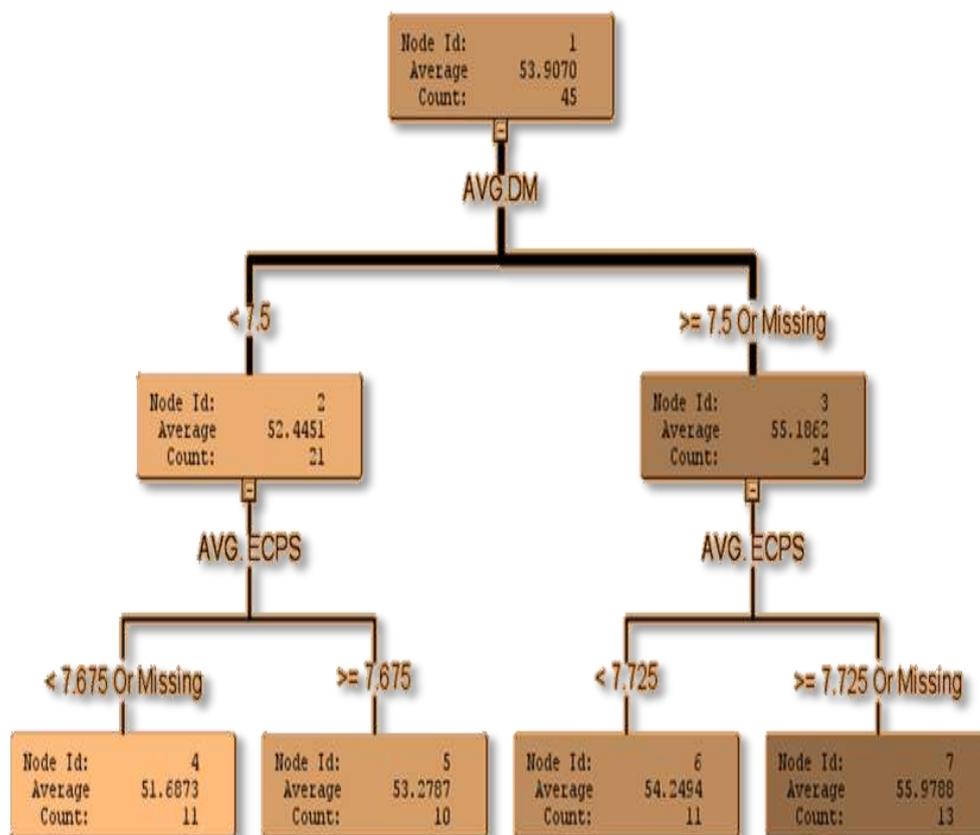


Fig.- 1 Decision Tree of TSE

The figure-1 depicts the Decision Tree of Teacher Self-Efficacy (TSE). Node-1 represents the root node (Total TSE). It is clear from the above diagram that Decision Making Self-Efficacy and Efficacy to Create Positive Institutional Climate are two main predictors that are contributing the most towards Total TSE. Also we can interpret from Node-2 of the diagram that if average DM < 7.5 then we can predict that Total TSE Score will be 52.4451. Node-3 represents the otherwise condition and predicted value of Total TSE will be 55.1862. Node-4 represents that if avg. DM < 7.5 and avg. ECPS < 7.675 then the predicted value of Total TSE will be 51.6873. Otherwise condition is represented by Node-5 which predicts a Total TSE of 53.2787. Node-6 represents that if avg. DM >= 7.5 and avg. ECPS < 7.725 then the predicted value of Total TSE will be 54.2494 and the otherwise condition is represented by Node-7 which will predict a total of 55.9708.

Conclusion

The results show that the post test TSE scores go significantly in favour of teaching through ICT Programme as the students gained a lot after the teaching through ICT Programme. This study also provides the teacher an empirical support for using ICT Programme during the training course of pre-service teacher educators.

References

- Adams, Susan Christine (2016) Improving Teacher Comfort Levels and Self-Efficacy with Technology Integration and Application of Technology into the Elementary Education Curriculum through the Tech Buddy Program by Ed.D., **Lindenwood University**, 2016, 150; 10120866
- Anderson, C., (2012). The experience of power: Examining the effects of power on approach and inhibition tendencies. *Journal of Personality and Social Psychology*, 83, 1362–137.
- Blurton, C (1996)., "New Directions of ICT-Use in Education". Available online <http://www.unesco.org/education/educprog/lwf/dl/edict.pdf>; accessed 7 August 21996.
- Edwards, J. L., Green, K. E., & Lyons, C. A. (2002). Personal empowerment, efficacy, and environmental characteristics. *Journal of Educational Administration*, 40(1), 67-86(20).
- Ertmer, P. A., & Ottenbreit-Leftwich (2010). Technology-using teachers: Comparing perceptions of exemplary technology use to best practice. *Journal of Research on Technology in Education*, 33(5). Retrieved April 6, 2009, from http://www.iste.org/Content/NavigationMenu/Publications/JRTE/Issues/Volume_331/Number_5_Summer_2001/Technology_Using_Teachers_Comparing_Perceptions_of_Exemplary_Technology_Use_to_Best_Practice,_Part_II.htm
- Mishne, Jenith (2012), Mishne, Jenith. Pepperdine University, ProQuest Dissertations Publishing, 2012. 3503821. An investigation of the relationships between technology use and teachers' self-efficacy, knowledge and experience.
- Sharma, H. and Sharma, L. (2018). Effectiveness of ICT Programme on Technological, Pedagogical & Content Knowledge (TPACK) among Pre-service Teacher Educators. *International Journal of Research in Social Sciences*, 8(6(1), pp.30-42.
- Sharma, H.L. and Madan, M. (2018). Multi-Media Teaching Programme (MMTP) for Teaching of English: A Trenchant Tool for enhancing Student Achievement. *International Journal of Research in Social Sciences*, 8,7(1),121-130.
- Sherman and Howard (2012) Sherman, K., & Howard, S. K. (2012, March, 05, 2012). Teachers' Beliefs about First- and Second-Order Barriers to ICT Integration: Preliminary Findings from a South African Study. Paper presented at the Society for Information Technology & Teacher Education International Conference 2012, Austin, Texas. S
- Tschannen-Moran & Hoy (2001), Tschannen-Moran M, Wool folk Hoy W, K (1998) Teacher Efficacy Its meaning and measure. *Review of Educational Research*, 68 (2), P (202-248)
- Wells, E. C. (2010). *Michigan State University Extension educators' perceptions of the use of digital technology in their work. Dissertation Abstracts International: Section A*, 71(02), (AAT 3381427).

A study on awareness of organic food products with reference to Trichirappalli City

Ms. Mary Suthanthira Malar*

Abstract

Food is necessary to all human being and animals, animals fitting to eat another. Human beings need food but not fitting like animals. Human beings are knows the techniques to cultivate food for them. Population is increasing day by day, the human beings are living together with more comfortable. The data collected from the consumers during the month of September 2018 to November 2018. The researcher has been taken 150 samples in Trichirappalli city. the researcher adopted convenient sampling method. The researcher concluded that, all the organic products are not available in the cities, major cities in India only having the organic food products. Consumers are in the situation to consumer the organic products to live with good health. Consumers are turn to organic products for good health. The farmers should produce more organic food products and sell with organic logo; consumers should educate to identify the organic products. Government should support the farmers to cultivate organic products.

Introduction

Food is necessary to all human being and animals, animals fitting to eat another. Human beings need food but not fitting like animals. Human beings are knows the techniques to cultivate food for them. Population is increasing day by day; the human beings are living together with more comfortable. According to the population increase the cultivation increasing, but the normal cultivation was not enough to meet out the population. The research helps to cultivate more i.e. hybrid. The storage facilities are helps to get the fruits and vegetables in all periods. The transportation is helps to get the products from other states and other countries. The manufacturing products are more durable, it reaches the entire world. Agricultural products are also has limited durability and reach the all the places because of sound transportation and storage facilities. The agriculturalist using more fertilizers to cultivate more products, these fertilizers spoil the land and water, the consumers should wash the fruits and vegetable if they get these products. The hybrid and fertilized food products affect the human being health. Hybrid eatable products are not good to human beings. Now the entire world is turns to organic because of health issues because of hybrid products. The seeds and cultivation methods are available to go far organic. The organic cultivation takes more time the yield also less in the beginning and the cultivation period is long. The farmer has to wait for long time to take the entire yield; it is the major problem in organic. The farmer are fixing high price for the organic food products. The people those are having good income, come to organic food products. Organic food products has the license and logo, it helps the public to identify the organic products.

The awareness leads to consumption, it marketers major duty is to create awareness of their products. Media helps the marketers to create awareness; they spend more money for

*Assistant Professor in Commerce, Holy Cross College (Autonomous), Trichirappalli – 620 002

advertisement and create awareness. The health issues of human being are also creating awareness, but it is not for products. This awareness spread by friends and relatives, it is because of love and affection. The social media helps to spread the news to their relatives and friends. The organic products also need more awareness; the consumers should demand the products, then only the shop keeper makes the products available. So, the awareness is major for all business. This study conducted by the researcher to find the level of awareness of organic food products with reference to Trichy.

Objectives of the study

The following are the importance of the study

1. To present the socio economic profile of the sample respondents
2. To measure the level of awareness of organic food products.

Score of the study

The marketers spend more money to create awareness; the awareness leads for more sales. The advertisement helps them to create awareness. But the farmers could not do the awareness, the socio media and organic logo helps the consumers to identify. This study conducted in Coimbatore city to measure the level of awareness of organic food products.

Period of the Study

The data collected from the consumers during the month of September 2018 to November 2018.

Sampling Design

The researcher has been taken 150 samples in Trichirappalli city. The researchers visit the organic shops to identify the customers, because it is very impossible to identify the customers at their residence. The researcher has given importance to all level of income group and gender. It will help the researcher to represent the sample as the entire population about the study area. With the above points the researcher adopted convenient sampling method.

Tools and techniques

The researcher applied percentage analysis to present the socio economic profile of the sample respondents and used five point likert scales to present

Analysis and interpretation

The analysis and interpretation shows the percentage analysis of the sample respondents, the level of awareness taken based on score of likert scale. Five point scale taken score 1 taken highly not aware, score 2 taken not aware, score 3 taken neutral, score 4 taken aware and score 5 taken highly aware of organic products.

Table 1: Socio Economic Factors – Percentage Analysis

Variable		Number of Respondents (%)	Variable		Number of Respondents (%)
Age	Up to 30 years	37 (24.67%)	Gender	Male	71 (47.33%)
	31 years to 50 years	67 (44.67%)		Female	79 (52.67%)
	Above 51 years	46 (30.67%)	Monthly income	Up to Rs. 20,000	32 (21.33%)
Family pattern	Joint	64 (42.67%)		Rs. 20,001 to Rs. 40,000	73 (48.67%)
	Nuclear	86 (57.33%)		Above Rs. 40,000	45 (30.00%)
Educational Qualification	School level	12 (8.00%)	Marital Status	Married	123 (82.00%)
	Under graduate	84 (56.00%)		Unmarried	27 (18.00%)
	Post graduate and others	54 (36.00%)	Area of residence	Urban	94 (62.67%)
Sample	150	Rural		56 (37.33%)	

Source: Survey data

The researcher collected the socio economic factors of the sample respondents to know the sample respondents. Thirty seven (24.67%) respondents are below 30 years old. Sixty seven (44.67%) respondents are between 31 years and 50 years and remaining forty six (30.67%) respondents are above 51 years old. Majority of the respondents are between 31 years to 50 years old.

Sixty four (42.67%) respondents are joint family and remaining eighty six (57.33%) respondents are nuclear family. Majority of the respondents are nuclear family.

Twelve (8.00%) respondents are studied school level. Eighty four (56.00%) respondents are undergraduates and remaining fifty four (36.00%) respondents are post graduates and other degree courses. Majority of the respondents are undergraduates.

Seventy one (47.33%) respondents are male and remaining seventy nine (52.67%) respondents are female. Majority of the respondents are female. It shows that the female only visit the shops and buy organic products than male. Majority of the respondents are female.

Thirty two (21.33%) respondents' monthly income is up to Rs. 20,000. Seventy three (48.67%) respondents' monthly income is between Rs. 20,001 and Rs. 40,000 and remaining forty five (30.00%) respondents' monthly income is above Rs. 40,000. Majority of the respondents' monthly income is between Rs. 20,001 and Rs. 40,000. Majority of the respondents' monthly income is between Rs. 20,001 and Rs. 40,000.

One hundred and twenty three (82.00%) respondents are married and remaining twenty seven (18.00%) respondents are unmarried. Majority of the respondents are married.

Ninety four (62.67%) respondents are staying in urban and remaining fifty six (37.33%) respondents are staying in rural area. Majority of the respondents are staying in urban areas.

Table 2: Level of awareness of Commodity

Level of Awareness of Commodity	Number of respondents	Percentage
Low	14	9.33
Medium	51	34.00
High	37	24.67
Total	150	100

Source: Survey data

The researcher has taken five organic products under commodity to find the level of awareness i.e. tea, coffee, rice, wheat and cereals. Out of one hundred and fifty sample respondents, fourteen (9.33%) respondents have low level of awareness of organic commodity. Fifty one (34.00%) respondents are have medium level of awareness of organic commodity and remaining thirty seven (24.67%) sample respondents are have high level of awareness of organic commodity. Majority of the respondents are medium level of awareness of organic commodity.

Table 3: Level of awareness of Spices

Level of Awareness of Spices	Number of respondents	Percentage
Low	29	19.33
Medium	87	58.00
High	34	22.67
Total	150	100

Source: Survey data

The researcher has taken twelve organic products under spices to find the level of awareness. i.e. cardamom, black pepper, white pepper, ginger, turmeric, vanilla, tamarind, clove, cinnamon, nutmeg, mace and chili. Out of one hundred and fifty sample respondents, twenty nine (19.33%) respondents have low level of awareness of organic spices. Eighty seven (58.00%) respondents are have medium level of awareness of organic spices and remaining thirty four (22.67%) sample respondents are have high level of awareness of organic spices. Majority of the respondents are highly aware of organic spices.

Table 4: Level of awareness of Fruits

Level of Awareness of Fruits	Number of respondents	Percentage
Low	8	5.33
Medium	43	28.67
High	99	66.00
Total	150	100

Source: Survey data

The researcher has taken seven organic products under fruits to find the level of awareness i.e. mango, banana, pineapple, passion fruits, orange, cashew nut, walnut. Out of one hundred and fifty sample respondents, eight (5.33%) respondents have low level of

awareness of organic fruits. Forty three (28.67%) respondents are have medium level of awareness of fruits and remaining ninety nine (66.00%) sample respondents are have high level of awareness of organic fruits. Majority of the respondents are high level awareness of organic fruits.

Findings

The following are the findings of the study, which are taken from percentage analysis and level of awareness.

1. Majority of the respondents are between 31 years to 50 years old.
2. Majority of the respondents are nuclear family.
3. Majority of the respondents are undergraduates.
4. Majority of the respondents are female.
5. Majority of the respondents' monthly income is between Rs. 20,001 and Rs. 40,000.
6. Majority of the respondents are married.
7. Majority of the respondents are staying in urban areas.
8. Majority of the respondents are medium level of awareness of organic commodity.
9. Majority of the respondents are highly aware of organic spices.
10. Majority of the respondents are high level awareness of organic fruits.

Suggestions

The following are the suggestions given by the researcher from this study.

1. Selling products are business to the whole sellers and retailers, the seller may sell the hybrid food products in the name of organic. Consumers are in need of more knowledge to identify the organic products.
2. The farmers should be educates to cultivate the organic food products. The fertilizers are important to get more yields. The farmers should understand the types of fertilizers and utilization of fertilizers. It will help the farmers to cultivate the organic food products.
3. Consumers are in need of more knowledge to identify the organic food products, organic food products are has organic logo, and the consumers should educate to differentiate the organic and conventional food products.

Conclusion

The study conducted in Trichy city to study the awareness of organic products. The researcher has taken one hundred and fifty samples on convenient sampling method. Consumers are in need of more knowledge to identify the organic products. Farmers should take necessary steps to make their land to cultivate the organic products. All the organic products are not available in the cities, major cities in India only having the organic food products. Consumers are in the situation to consumer the organic products to live with good health. Consumers are turn to organic products for good health. The farmers should produce more organic food products and sell with organic logo; consumers should educate to identify the organic products. Government should support the farmers to cultivate organic products.

Reference

1. Alam, Anwar and Wani Shafiq, A. (2003) Status of organic agriculture worldwide—An overview, In: Proceedings of National Seminar on Organic Products and their Future Prospects, Sher-e-Kashmir, University of Agricultural Sciences and Technology, Srinagar, pp. 95-103.
2. Cacek, Terry and Linda, Langer L. (2009) The economic implications of organic farming, American Journal of Alternative Agriculture, (June): 1-9.
3. Chhonkar, P.K. (2003) Organic farming science and belief, Journal of the Indian Society of Soil Science, **51**(4): pp. 365-377.
4. Ramesh, P., Singh, Mohan and Subba Rao, A. (2005) Organic farming: Its relevance to the Indian context, Current Science, **88**(4).
5. Willer, H. and Klicher, L. (Eds) (2009) The World of Organic Agriculture: Statistics and Emerging Trends. IfOM, Bonn, FiBL, Frick, ITC, Geneva.

Economics of Redgram cultivation on mutually aided cooperative society (MACS) and non-mutually aided cooperative society (non-MACS) farms in Anantapur district of Andhra Pradesh

D.RAFI*

P.JOSHNA**

Abstract

Credit is important for development and poverty alleviation. Agricultural co-operatives organise, promote and market, processing and storage of agricultural, horticultural and forest produce. The Andhra Pradesh Mutually Aided Co-operative Societies Act (APMACS) 1995 implemented in the state of Andhra Pradesh has rectified a number of restrictive provisions of the earlier co-operative law in Andhra Pradesh. Anantapur is the leading district in Rayalaseema regarding mutually aided cooperative societies (MACS) where 3472 mutually aided cooperative societies exist. The total cost of cultivation per hectare of redgram was Rs. 25,216 on MACS and Rs. 25,605 on non-MACS farms. On an average, the yield of main product per hectare of groundnut was 14.02 and 15.69 Q. Return per rupee of expenditure was Rs. 1.44 and Rs. 1.41 for MACS and non-MACS farms respectively.

Keywords: credit, cooperatives, mutually-aided, development

Introduction

Addressing poverty is the most significant challenge in this millennium, as clearly reflected in the millennium development goals. Credit is important for development and poverty alleviation. It enables farmers and entrepreneurs to undertake new investments or to adopt new technology (Khandker and Faruquee, 2003) [2]. Agricultural co-operatives organise, promote and market, processing and storage of agricultural, horticultural and forest produce. They distribute agricultural machinery, undertake wholesale, retail and foreign trade. Effectively, major agricultural processing, distribution, supplies and agro-marketing across India are carried on through cooperatives. The Co-operative Societies Act and its state counterparts did not provide a very enabling framework for emergence of business enterprises owned, managed and controlled by the members for their own development. Several state governments, therefore, have enacted the Mutually Aided Co-operative Societies (MACS) Act for enabling promotion of self-reliant and vibrant co-operative societies based on thrift and self-help. The Andhra Pradesh Mutually Aided Co-operative Societies Act (APMACS) 1995 implemented in the state of Andhra Pradesh has rectified a number of restrictive provisions of the earlier co-operative law in Andhra Pradesh. In the recent years, the focus of the Government of India, state governments and the various development agencies has been towards producer companies. The collectivization of producers, specifically marginal and small farm holders into producers'

*Ph.D scholar, Department of Agricultural and Rural Management, Tamil Nadu Agricultural University, Coimbatore

**Second year MBA(ABM) student in IABM Tirupathi

organizations is emerging as the effective possible pathway to address improved access to investments, technologies, knowledge support, inputs and markets. Many of the non-governmental organizations (NGOs) in the country had been facilitating formation of co-operatives and farmer producer organizations. In the recent years some of them have graduated to facilitate formation of MACS and producer companies on behalf of state governments and developing funding agencies.

Against this background the present study has been taken up to estimate economics of redgram cultivation on MACS and non-MACS farms in Anantapur district of Andhra Pradesh.

Material and Methods

The present study was conducted in Andhra Pradesh state. Purposive-cum-random sampling technique was employed for the selection of sample in the present study. Anantapur is the leading district in Rayalaseema regarding mutually aided cooperative societies (MACS) where 3472 mutually aided cooperative societies exists. Hence, Anantapur district was purposively selected. The list of the mandals along with corresponding number of MACS farmers was prepared. One mandal from the district with maximum number of MACS farmers was selected purposively. The list of 25 villages covered by the MACS in selected mandal was prepared and 10 villages were randomly selected for the present study. From the selected villages 60 MACS and 40 non-MACS farmers were randomly selected. The required data for the study were collected from the selected farmer snusing a pre-tested schedule for the agricultural year 2017-18.

Tools and techniques of analysis

Simple arithmetic averages and percentages were worked out to arrive at costs, returns and farm efficiency measures.

Cost concepts

Cost A1: It includes: Value of hired human labour, value of hired and owned animal labour, value of hired and owned machine labour, value of seed (both farm seed and purchased), value of manures (owned and purchased) and fertilizers, depreciation on fixed assets, irrigation charges, land revenue, interest on working capital and miscellaneous expenses.

Cost A2: Cost A1 + rent paid for leased in land.

Cost B1: Cost A1+ interest of fixed capital (excluding land)

Cost B2: Cost B1 + rental value of owned land + rent for leased in land.

Cost C1: Cost B1 + imputed value of family labour.

Cost C2: Cost B2 + imputed value of family labour.

Cost C3: Cost C2+ 10 per cent of cost C2 as management cost.

Farm efficiency measures

Farm business income = Gross income – Cost A1

Family labour income = Gross income – Cost B2

Net income = Gross income – Cost C3

Farm investment income = Farm business income – imputed value of family labour (or) Net income + imputed rental value of owned land + interest on owned fixed capital invested

Results and Discussions

Farming is the main economic activity of the members in MACS as well as non-MACS. Redgram crop is majorly cultivated by the selected farmers. The profitability of these

depends up on the cost structure, output and returns. Costs include the expenditure on various inputs and input services employed in the production process.

It is observed from Table1 that on an average 45.4 mandays were utilized per hectare by MACS and 49 mandays on redgram control sample. Among different operations of labour use, weeding and harvesting were the maximum labour absorbing operations. Weeding was undertaken by the farmers to keep the redgram field weed free employing 22 mandays per hectare on MACS farms and 23 mandays on control sample farms. In the study area redgram crop was harvested both manually and with machinery. This operation required 7 mandays per hectare for MACS farms, while 6 mandays were utilized by control sample farms. The ploughing and levelling of land was done by the machinery and the participation of human labour in this operation was found to be negligible. The application of farm yard manure to improve productivity of the soils required human labour to the extent of 3 mandays on control sample farms. The human labour required for sowing operation was 2 mandays each for MACS and non-MACS farms. For the application of fertilizers, 2 mandays each for MACS and control sample farms were needed. In order to control the pests and diseases, farmers had undertaken plant protection measures. For this activity 2 mandays each for MACS and non-MACS farms were used. Drying and assembling required 3 mandays for each of MACS farms and non-MACS farms.

It is seen from Table2 that the MACS farmers used 10 kg of seed per ha. While non-MACS farmers, 11.81 kg. FYM was not applied by the MACS members while in non-MACS members applied 1.13 kg. Coming to fertilizers usage, the quantity of N, P₂O₅ and K₂O were to the extent of 22.42, 33.86 and 2.12 kg per hectare respectively by MACS members while the use of same on the non-MACS farms was of the order 16.93, 44.2 and 8.18 kg respectively. Gypsum was applied to an extent of 7.57 kg by MACS members while the same was not applied by non-MACS members. Application of pesticides was almost the same on the farms of MACS as well as non-MACS.

The total cost of cultivation per hectare of redgram was Rs. 25,216 on MACS and Rs. 25,605 on non-MACS farms (Table3). The break-up of total costs into operational costs and fixed costs indicated that the operational costs were Rs. 19,935 (79.06%) for MACS farmers and Rs. 21,812 (85.19%) for non-MACS farmers, while the fixed costs were Rs. 5,281 (20.94%) and Rs. 3,793 (14.81%) for MACS and non-MACS farmers respectively.

Human labour is required to perform various cultural practices *viz.*, land preparation, sowing, application of manures and fertilizers and plant protection chemicals, weeding, harvesting and stripping. Of the total costs, human labour was the highest costing input service in the cultivation of rainfed redgram. The per hectare expenditure incurred towards this resource service was Rs. 6,214 (24.65%) for MACS farmers and Rs. 6,755 (26.38%) on non-MACS farmers. Of the total costs, machine power input service expenditure was Rs. 9,073 (35.98%) for MACS farmers and Rs. 8,725 (34.08%) for non-MACS farmers. Seed cost was Rs. 550 (2.18%) on MACS farms and Rs. 676 (2.64%) per hectare on non-MACS farms. The cost of seed in MACS was less when compared to non-MACS farms this is because the seed obtained by MACS was at the subsidized price from AccionFreterna. On manure and fertilizers the MACS farmers incurred Rs. 2,055 (8.15%) while on non-MACS farms it was Rs. 3,615 (14.12%). MACS farmers incurred Rs. 1,675 over non-MACS farmers Rs. 1,642 with regard to plant protection chemicals. Among the fixed costs, rental value of owned land was the major item. It was Rs. 3,500 accounting for 13.08 per cent on MACS and 13.67 per cent on non-MACS farms. The other items of fixed

costs were land revenue, depreciation and interest on fixed capital.

It is clear from Table4 that there was no leasing in activity among the selected farmers and hence the cost A1 and cost A2 were the same. On an average, the total cost of cultivation (Cost C2) was more or less the same on MACS and non-MACS farms with Rs. 25,216 and 25,605 respectively.

The details of physical output and gross returns per hectare of redgram crop are presented in Table5. On an average, the yield of main product per hectare was 6.29 and 15.69 quintals on MACS and non-MACS farms respectively. The MACS and non-MACS farms realized a gross income of Rs. 34,264 and Rs. 29,091 respectively. The net income was higher on MACS with Rs. 9,048 compared to Rs. 3,486 on non-MACS farms. The higher income for MACS is due to more price per quintal *i.e.* Rs. 5,450 for their produce while for non-MACS it is Rs. 4,950. It was noticed that the productivity was more or less the same on both MACS to non-MACS farms. MACS farms realized higher net income in cultivation of rainfed redgram in the study area.

The average total costs (ATC) to produce one quintal of redgram were Rs. 4,010.95 on MACS farms, while it was Rs. 4,312.82 on non-MACS farms (Table6). The price per quintal was more on MACS farms with Rs. 5,450 compared to Rs. 4,900 on non-MACS farms. This is because the MACS farmers sell their produce through auction centers of A.F at the minimum support price, while non-MACS farmers sell their produce to middle men in the village itself. The returns per quintal were more on MACS farms with Rs. 1,440 compared to Rs. 588 on non-MACS farms.

The gross income realized on MACS farms was higher with Rs. 34,264 as against Rs. 29,091 on non-MACS farms (Table .7). This is because that the MACS farmers were paid Rs. 5,450 per quintal, while in non-MACS farmers it was Rs. 4,950. Net income too exhibited similar trend, with MACS recording Rs. 9,048 against Rs. 3,486 by non-MACS farms. Though the gross income was a measure to assess the efficiency of the farm business, but it alone does not help us to read the success of the farm business. Therefore another measure namely farm business income which indicates returns to owned resources like land, capital and labour was estimated. MACS farmers were distinctly superior to non-MACS farmers in getting maximum productivity out of these resources. It was Rs. 15,061 on MACS farms and Rs. 9,074 on non-MACS farms. MACS farms were able to secure Rs. 1.35 per every rupee spent, while non-MACS farm received Rs. 1.13.

Family labour income was another measure of farm efficiency which represents returns to farmer's own labour and family labour. MACS farms derived more family labour income of Rs. 10,743 compared to non-MACS farms (Rs. 5,530). It was noticed that the MACS farms were efficient in utilization of resources in the cultivation of rainfed redgram. Farm investment income is a measure to indicate returns to fixed capital. It was Rs. 12,709 on MACS farms and Rs. 6,718 on non-MACS farms respectively.

Table 1 Human labour utilization in redgram of MACS and Non-MACS farms
(man days per ha)

S.No	Particulars	MACS	Non-MACS
1	Ploughing	2 (4.40)	2 (4.08)
2	Levelling	2 (4.40)	2 (4.08)
3	Application of manures	-	3.00 (6.12)
4	Sowing	2.00 (4.40)	2.00 (4.08)
5	Application of fertilizer	2.00 (4.40)	2.00 (4.08)
6	Weeding	22.00 (48.45)	23.00 (46.93)
7	Plant protection	2.00 (4.40)	2.00 (4.08)
8	Harvesting	7.00 (15.47)	6.00 (12.27)
9	Drying and Assembling	3.00 (6.60)	3.00 (6.12)
10	Threshing and winnowing	3.40 (7.48)	4.00 (8.16)
	Total	45.40 (100)	49.00 (100)
	Owned labour	11.20 (24.66)	13.62 (27.79)
	Hired labour	34.12 (75.34)	34.38 (72.21)

Note: Figures in parentheses indicate percentages to the total.

Table2 Input usage in redgram cultivation of MACS and Non-MACS farms (Per ha.)

S.No	Particulars	Redgram	
		MACS	Non-MACS
1.	Seed (kg)	10	11.81
2.	FYM (tonnes)	-	1.13
3.	Fertilizer (kgs)		
	N	22.42	16.93
	P ₂ O ₅	33.86	44.20
	K ₂ O	2.12	8.18
	Gypsum	7.57	-
4.	Plant protection chemicals		
	Litre	2.53	1.81
	Powder	2.04	1.93

Table3 Cost of cultivation of redgram component wise on MACS and Non-MACS farms (in rupees per ha)

S.No	Particulars	Redgram	
		MACS	Non-MACS
1			
a.	Human Labour	6216 (25)	6755 (26)
	Owned	1696 (7)	2044 (8)
	Hired	4519 (18)	4711 (18)
b.	Machine power	9073 (36)	8725 (34)
	owned	1240 (5)	-
	Hired	7833 (31)	8725 (34)
c	Seed	550 (2)	676 (3)
d	Manures and fertilizers	2055 (8)	3615 (14)
	Manure	-	1137 (4)
	Fertilizer	2055 (8)	2479 (10)
e	Plant protection chemicals	1675 (7)	1642 (6)
f	Interest on working capital	368 (1)	399 (2)
	Total operational costs	19936 (79)	21812 (85)
2			
	Land revenue	150 (1)	150 (1)
	rental value of owned land	3500 (14)	3500 (14)
	depreciation	813 (3)	99 (0.3)
	Interest on fixed capital	818 (3)	44 (0.1)
	Total fixed costs	5281 (21)	3793 (15)
3	Total costs	25216 (100)	25605 (100)

Note: Figures in parentheses indicate percentages to the total.

Table4 Cost concepts in redgram production on MACS and Non-MACS farms
(Rupees per ha)

S.No	Particulars	Redgram	
		MACS	Non-MACS
1	Cost A1/ A2	19203	20017
2	Cost B1	20021	20061
3	Cost B2	23521	23561
4	Cost C1	21717	22105
5	Cost C2	25216	25605
6	Cost C3	25873	25917

Note: Figures in parentheses indicate percentages to the total

Table5 Output and returns per hectare of redgram on MACS and non-MACS farms

S. No	Particulars	Units	Redgram	
			MACS	Non-MACS
1.	Yield in Physical terms			
a.	Main Product	Quintals	6.29	5.94
b.	By-Product	Cart Loads	-	-
2.	Monetary Units			
a.	Main Product	Rs.	34264	29091
b.	By-Product	Rs.	-	-
3.	Gross Returns	Rs.	34264	29091
4.	Cost of Cultivation	Rs.	25216	25605
5.	Net Returns	Rs.	9048	3486
6.	Returns per rupee of Expenditure	Rs.	1.35	1.13

Table6 Costs of production per quintal of redgram in MACS and non-MACS farms
(rupee per quintal)

S.No	Particulars	Redgram	
		MACS	Non-MACS
1.	Costs		
a.	Average variable costs (AVC)	3170	3673
b.	Average Fixed costs (AFC)	839	638
c.	Average Total costs (ATC)	4010	4312
2.	Price per quintal	5450	4900
3.	Returns per quintal	1440	588

Table7 Measures of farm income in redgram production on MACS and non-MACS farms (Rupee per ha)

S. No	Particulars	Redgram	
		MACS	Non-MACS
1	Gross income	34264	29091
2	Net income	9048	3486
3	Farm Business Income	15061	9074
4	Family Labour Income	10743	5530
5	Farm Investment Income	12709	6718
6	Returns per rupee of expenditure	1.35	1.13

References

1. Asmatoddin M, Jawale SV, Perke DS. Economic analysis of pulses on medium farms in Marathwada region of Maharashtra Agriculture update; 2009; 4: ¾:262-265.4.
2. Biradar B. Rajkumar. Economics of redgram based cropping in Bidar district M.Sc (Agri) Thesis (Unpublished), submitted to University of Agricultural Sciences, Dharwad, 2007.
3. Khandker SR, Faruquee RR. The impact of farm credit in Pakistan. Agricultural Economics. 2003; 28(3):197-213.
4. Thomber AP, Ghulghule JN, more. Constraints faced by pulse growers in production and marketing and suggestions made by them in Marathwada region of Maharashtra. Department of Agri. Economic, Marathwada Agricultural University, Parbhani (M.S.), India. Agriculture. 2009; 4: ½:73-75.
5. Shiferaw B, Hellin J, Muricho G. Market access and agricultural productivity growth in developing countries: Challenges and opportunities for producer organizations. Economic Democratization. 2016; 5:103-124.
6. Subhangi S. Farmers Producer Organization for effective linkage of small producers with market. International Journal of Applied Research. 2016; 2(10):142-146.

Role of Self Efficacy In The Job Satisfaction Of Employees

Dr. Bindu Anto Ollukkaran*

Dr. Sunanda.C**

***Abstract:** Satisfied employee is an asset to any organization. Job satisfaction is a way of feeling of fulfilment that one gets on performing or doing one's job. Hence the present study was conducted to study the role of self efficacy in improving job satisfaction. For this, data regarding the job satisfaction and also self efficacy were collected from the employee in service sector. In the present sample the employees are having high level of self efficacy and high level of job satisfaction. They are lacking in satisfaction about pay scales and the advices given by their supervisors. Significant positive correlation ($r = 0.658^{**}$; $p < 0.001$) between self efficacy and job satisfaction proves that self efficacy has a significant positive impact on the job satisfaction of the employees in an organisation.*

Introduction

Nowadays, human resources are vitally and strategically important for organizations. An increased attention to human resources has made them as the first customers of organizations who fulfil their objectives. Skilled and efficient manpower is the most precious wealth of any organization. It can be said that employees with higher job satisfaction are in a good condition in terms of physical and mental abilities. Job satisfaction means the overall attitude of a person towards his/her job. Any organization should identify the factors causing job satisfaction of employees to create the necessary motivation in human resources to utilize their maximum effort, skill, knowledge and help the organization in achieving its goals. Self-efficacy is one of the factors influencing job satisfaction.

Self-efficacy is the core concept of Bandura's social cognitive theory and refers to one's perceived abilities in dealing with a problem and performing an appropriate action. The concept of self-efficacy suggests that the cognitive, motivational, emotional, and functional processes are controlled and managed by the professional belief. Evidence obtained by different analytical and methodological strategies as well as intercultural studies have shown that high self-efficacy positively related to positive thoughts. Self-esteem and higher goals, high motivation, high level of mental wellbeing, positive emotions and physical condition, while low self-efficacy is associated with anxiety, depression and low mental wellbeing. Self-efficacy can positively affects all aspect of life. People with strong sense of self-efficacy believe that they are able to effectively control the outcome of events in their lives.

A strong sense of self-efficacy is effective in achieving personal goals and how a person utilizes all his/her effort to achieve them and to what extent he/she copes with problems and responds to failures. Looking at the world in the 21st century and the challenges it brings, it is clear that not all employees are self-efficient in their work; therefore this may

* Associate Professor, MBA Dept., MESCE

** Assistant Professor, Statistics Dept., College of Veterinary and science, Pookode

result in the decline of job satisfaction of employees. Hence, this study focuses on the role of self-efficacy in job satisfaction of the employees. The main objectives of the study are

- To measure the satisfaction level of employees
- To measure the level of self-efficacy in employees.
- To know the role of self-efficacy in improving job satisfaction

Review of literature

Bandura (1977) hypothesised that self-efficacy affects choice of activities, effort, persistence, and achievement. Compared with person who doubt their capabilities, those with high self-efficacy for accomplishing a task participate more readily, work harder, persist longer when they encounter difficulties, and achieve at a higher level. Zimmerman and Ringle (1981) observed that people acquire information to appraise self-efficacy from their performance, vicarious (observational) experience, forms of persuasion, and psychological relations; one's performance offers reliable guides for assessing self-efficacy. Success raises efficacy and failures lower it, but once a strong sense of self-efficacy is developed a failure may not have much impact (Bandura 1986)

According to the Social-cognitive theory of learning, a person's self-efficacy depends on behavioural, environmental and cognitive factors (Bandura, 1986). Bandura and Wood (1989) supported the idea that a robust sense of personal efficacy to sustain the necessary attention on productivity and a constant effort to achieve goals is the key of success in many areas. Motivation and self-efficacy are enhanced when people perceive they are performing skilfully or becoming more competent. Lack of success or slow progress will not necessarily lower self-efficacy and motivation if individuals believe they can perform better by adjusting their approach (e.g. expand more effort, use effective task strategies) (Schunk, 1989).

Between the years, 1927 and 1932 Pr. Mayo of Harvard Business School investigated the relationship of productivity and job itself. Although numerous definitions have been given to job satisfaction, there is no consensus on how job satisfaction should actually be defined. The claim that a different meaning should be given to job satisfaction, depending on the research subject, seems reasonable (Kantas, 1998). Personal dedication, investment in one's job, and commitment increase job satisfaction in clergy and religious order workers (Wittberg 1993).

Bogler (2001) defines job satisfaction using teachers' perceptions of occupational prestige, self-esteem, autonomy at work and professional self-development.

The persistence of an individual for high-performance working practices (professional motivation) to achieve the objectives of the group has resulted in the increase of satisfaction (Robbins, 1984). According to Kanter (1977), an employee being satisfied with their present job's contents does not guarantee the same level of satisfaction at the same time for their potential career development or internal mobility in organization. For instance, an employee being satisfied with current job contents means that the worker has many opportunities in their present career, receives unofficial professional training, and expects better long job prospects. In contrast, employees with fewer opportunities for career development are more likely to leave their unsatisfying job (Kanter, 1977).

Methodology

Data for the present study was collected from 96 employees purposively selected from different hospitals. Data were collected from individuals by using a self-structured questionnaire containing three sections namely demographic profile, self-efficacy and job

satisfaction. Data related to Self efficacy and job satisfaction was a collected by using five point likert scale questions. There are eight statements related to self efficacy and 12 statements related to Job satisfaction. Collected data were analysed by using statistical software SPSS version 21.0.

Percentage analysis was used a preliminary analysis and correlation coefficient followed t-test for testing the significance of the correlation was used for assessing the role of efficacy on job satisfaction.

Results and discussion

Data were collected form a total of 96 sample employees. Demographic profile of the respondents is given in Table 1. Out of 96 respondents majority (86%) were females which points out to the fact that the manual work proportion of male to female is

Table 1: Demographic profile of sample respondents

Characteristics	Category	Frequency	Per cent
Gender	Male	13	14
	Female	83	86
Age group	<30	31	32
	30-45	55	57
	>45	10	11
Marital Status	Married	84	88
	Unmarried	12	12

very less. Age group distribution shows that 57 per cent are belong to middle age group (30-45) and almost one third of the sample are younger age group. And it is also noted that 88 per cent are married. Results shows that majority of the employees in this private hospitals are females and married. And hence they have dual responsibility in their life which will reflect in their self efficacy and job satisfaction.

Self efficacy was measured in terms of eight variables namely risk taking, confident, self esteem, persistence, self-reliability, expertness, persuasion and problem solving. The analysis of above variable is shown in Table 2.

Table 2: Perception about self efficacy of the employees

Dimension	Always	Frequent	Occasionally	Rarely	Never
Risk taking mentality	22 (23)	50 (52)	18 (19)	6 (6)	0
Confidence exhibited	21 (22)	42 (44)	25 (26)	6 (6)	0
Self-esteem	24 (25)	48 (50)	18 (19)	6 (6)	0
Persistence	34 (35)	36 (38)	10 (10)	15 (15)	2 (2)
Self reliability	31 (32)	36 (38)	24 (25)	4 (4)	1 (1)
Expertness	34 (35)	36 (38)	16 (17)	10 (10)	0
Problem solving capacity	22 (23)	40 (42)	22 (23)	12 (12)	0
Persuading ability	19 (20)	38 (40)	34 (35)	4 (4)	1 (1)

Values in the brackets are percentages

Results given in the Table 2 shows Out of 96 respondents 23 per cent are always able to solve difficult problems and 52 per cent can solve the problems frequently. Respondents who solve problems occasionally are 18 whereas those who rarely solve the difficult problems are numbered 6 out of 96. About 66 percent of the respondents can either frequently or always deal with unexpected events in an efficient manner. Almost three fourth of the respondents are able to stick to their aims and accomplish their goal. Whereas 19 per cent of respondents occasionally stick to their aims and only 6 per cent of respondents rarely stick to their aims and work. Out of 96 respondents, 71 per cent always

find means to get what they want and get their things done and 10% respondents occasionally find their means to get thing done. About 70 per cent of them can usually handle whatever comes in their way. About 73 per cent find various solutions when confronted with a problem either always or frequently. About two third of them (65%) can solve most of the problem if they invest necessary effort. Whereas 23 per cent solved the problem occasionally and 12 per cent solved it rarely. Almost 60 per cent can persuade people to do thing for the wellbeing of the company. However, about 35 per cent can occasionally persuade people where as 4 respondents rarely persuade other for company's wellbeing. Results show that employees in the present sample almost one third is having high self efficacy in their job.

An index to each dimension was worked out by using weighted average with frequency to

each score as weight and is given in Table 3. All scores are above three which is the median score percentage score is more than 66.7 indicating that they are having a high level of self efficacy in all dimensions.

Factors	Index	Percentage score
Risk taking mentality	3.91	72.8
Confidence to deal unexpected events	3.77	69.3
Self esteem	3.93	73.3
Persistence of employees	3.89	72.3
Self-reliability	3.95	73.8
Expertness	3.97	74.3
Problem solving capacity	3.75	68.8
Persuading ability	3.84	71.0

Job satisfaction of employees were assessed by using twelve variables such as responsibility, opportunity to use skill and abilities, variety of tasks, job security, salary packages, sick leave, provision, relationship with co-workers etc. and perception about that variables are given in Table 4.

Table 4: Perception about Job satisfaction of the employees

Dimension	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
Sense of responsibility	31 (32)	41 (43)	14 (15)	10 (10)	0
Opportunity to use skill and ability	18 (19)	47 (49)	24 (25)	5 (5)	2 (2)
Variety of task done	16 (17)	49 (51)	18 (19)	10 (10)	3 (3)
Satisfaction of employees with regard to pay scale	16 (17)	44 (44)	20 (21)	12 (12)	6 (6)
Feeling Job security	37 (38)	39 (41)	14 (15)	6 (6)	0
Sick leave provision	31 (32)	38 (40)	13 (14)	10 (10)	4 (4)
Relationship with fellow workers	29 (30)	40 (42)	13 (14)	10 (10)	4 (4)
Relationship with superiors	23 (24)	42 (44)	26 (27)	5 (5)	0
Satisfaction with the communication process	18 (19)	45 (47)	22 (23)	9 (9)	2 (2)
Satisfaction towards the prevailing working condition	20 (21)	48 (50)	22 (23)	6 (6)	0
Satisfaction towards the attention given by the supervisors	12 (12)	45 (47)	21 (22)	14 (15)	4 (4)
Satisfaction towards grievance solving system	20 (21)	43 (45)	29 (30)	0	

About one fourth of the respondents (75%) are having a high sense of responsibility.

Majority (68%) are getting opportunity to explore their skill and abilities and are able to do variety of tasks. Only 60 per cent are satisfied with the salary provided. However, almost 79 per cent are feeling satisfied in job security and the same per cent are satisfied with sick leave provision provided by the organisation. About 69 per cent are keeping cordial relationship with the fellow workers and about 65 per cent are having friendly relationship with superiors. About two third of the respondents are satisfied

towards the communication process in the organization and also towards the prevailing work condition in the organisation. Only Below 60 per cent are satisfied in the attention

Table 5. Factor Wise – Total Satisfaction

Factors	Index	Percentage score
Employees sense of responsibility	3.96	74.0
Opportunity to use skill and responsibility	3.77	69.3
Able to do variety of tasks	3.67	66.8
Pay scale	3.52	63.0
Job security	3.98	74.5
Sick leave provision	3.85	71.3
Relationship with fellow workers	3.83	70.8
Relationship with supervisors	3.86	71.5
Communication process	3.70	67.5
Working condition	3.85	71.3
Attentions given by supervisors	3.48	62.0
Grievance system	3.82	70.5

given by the supervisors. Only 63 per cent are satisfied with grievance solving system in the organisation.

An index to each dimension to job satisfaction was worked out by using weighted average with frequency to each score as weight and is given in Table 5. All scores are above three which is the median score. Percentage score is more than 66.7 for all dimensions except satisfaction in pay scale, and attention given by supervisors indicating that they are having a high level of satisfaction in these dimensions. They are lacking in satisfaction in pay scale, and attention given by supervisors

From the above calculation correlation coefficient of self-efficacy and job satisfaction level is 0.658. t-test was done for testing the significance and it was found to be significant at 0.01 level.

Table 6. Relations between self efficacy and job satisfaction

Variable	Correlation	t-value	p-value
Self efficacy vs job satisfaction	0.658	8.472**	< 0.001

Hence there exists a significant relationship

between Self efficacy and job satisfaction of the employees. Correlation coefficient was found to be positive indicating that self efficacy is positively correlated with job satisfaction. This proves that improvement in self efficacy improves the job satisfaction level of an employee.

The result of the present study reveals that the employees have a great sense of satisfaction in their respective jobs. In order to improve their satisfaction level the organization can adopt certain practices like,

- The organization can make employees more secured in their jobs by providing benefits and incentives.
- The organization has to fix a prospective pay scale for the salary payment since this factor is considered as a pull factor which makes employees more committed and loyal to the work.
- The organization can also make arrangements for the improvements in the prevailing working conditions.
- The organization should try to improve the risk taking mentality of the employees by giving them proper training.
- The organization should provide proper advices and guidelines for solving the problems faced by the employs.

Conclusion

A study was conducted to understand the role of self-efficacy in job satisfaction and to measure the prevailing satisfaction and self-efficacy level in the employees. From the study it was found that employees have a great sense of job satisfaction and their self-efficacy level was also high to an extent. The most influencing aspect in the satisfaction of employees is job security. Most of the employees have a high level of self-esteem and confidence. Significant positive correlation indicates that high self-efficacy can lead to high level of job satisfaction.

References

- Aswathappa (1997) *Human Resource and Personnel Management*, Tata-McGraw publishing co-Ltd (1997)
- Robbins, S.P. (1984). *Management: concepts and practices*. Englewood Cliffs, NJ: Prentice Hall.
- Subba Rao P. (1999) *Human Resource Management and Industrial relations*. Himalaya publishing house, New Delhi.
- Bandura, A. (1986). Social foundation of thought and action: A social cognitive theory. Englewood cliffs NJ: Prentice-Hall
- Bandura, A. (1994).self-efficacy.(V.S.Ramachandran,ED.) Encyclopedia of human behaviour 4, pp. 71-81.
- Curri van, D.B. (1999). The causal order of job satisfaction and organizational commitment in models of employee turnover. *HumanResource Management Review*, *Bandura, A (1977). Self-efficacy: towards a unifying theory of behavioural change. *Psychological review*, 84(2), 191-215.
- Kanter, R.M. (1977). *Men and Women of the corporation*. New York: Basic Books. 9(4), pp 495-524.
- Schunk, D.H., & Gunn, T.P. (1989). Self-efficacy and skill development: Influence of task strategies and attributions. *Journal of Educational Research*, 79, 238-244
- Wittberg, P. (1993). Job satisfaction among lay, clergy and religious order workers for the catholic church: a preliminary investigation [Electronic Version].*Review of Religious Results* 35,1,pp 19-33.
- Wood, R. and Bandura, R. (1989) "Social cognitive theory of organizational management", *Academy of Management Review*. Vol. 14, No(3).
- Zimmerman, B.J., &Ringle, J. (1981). Effects of model persistence and statements of confidence on children's self-efficacy and problem solving. *Journal of educational psychology*,73, pp:485-493.

Phytochemical Analysis of *CostusSpeciosus* Koen

R.Thangadurai¹, **R.Thanga Selvam¹, Dr.D.Vanila², Dr.A.Selvin Samuel¹ and Dr.D.Amish Abragam^{1*}

Abstract

The present works enumerate the preliminary phytochemical analysis, fluorescence analysis, physiochemical character and quantitative estimation of leaf extracts of *Costusspeciosus*, is belongs to *Zingiberaceae*. The leaf samples of *C.speciosus* were extracted using different solvent such as Hexane, Ethyl acetate, Acetone, Methanol and aqueous extract. For preliminary phytochemical analysis, Saponin, protein, phenol, steroid, catachin, triterpenoids, sugar, and reducing sugar were predominantly present in selected samples. For fluorescence analysis, the leaf powder showed different colours in various extracts. The physico-chemical determinations of powder of *Costusspeciosus* leaves contain the methanol extract shows the maximum extractive values and hexane extract shows the minimum value. The quantitative analyses of *Costusspeciosus* leaves were carried out in dry samples and high quantity of phenols and flavonoids are found in selected plant sample.

Introduction

The traditional use of medicinal plants is most important for developing countries, as a normative basis for the maintenance of good health, has been widely observed [1]. The medicinal plants are highly useful for detecting as well as curing various diseases from time immemorial because of the presence of phytochemical constituents [2]. The phytochemicals which are naturally present in the medicinal plants that possess a very great amount of defense mechanism which in turn protects the mankind from various diseases. They are primary and secondary compounds. The primary constituents consist of chlorophyll, proteins and common sugar whereas the secondary compounds consist of terpenoid, alkaloids and phenolic compounds [3]. The presence of a phytochemical may lead to further isolation, purification and characterization. Consequently, it can be used as the basis for a new pharmaceutical product. With this background, the present papers enumerate the phytochemical estimation of leaf extract of *Costusspeciosus* using different solvent system. The *Costusspp* are commonly grown as medicinal and ornamental plants. The rhizome is anti-diabetic in nature because it is the major source of diosgenin and it is used to treatment of diabetes mellitus [4,5,6];

Dasgupta et al. (1970) reported that Diosgenin is the major constituent isolated from *C. speciosus* [7]. The maximum quantity of diosgenin reported in the stem is 0.65%, in the leaves 0.37% and in the flowers 1.21% and other constituents isolated are Tigogenin, dioscin, gracillin β -sitosterol glucoside [8]

¹R.Thangadurai (Register No.11732), ¹R.Thanga Selvam** (Register No 12001) Research Scholars, St.John's College, Palayamkottai, Affiliated to Manonmaniam Sundaranar University, Tirunelveli-12; ²Dr.D.Vanila, Associate Professor of Botany & HOD (Rtd), TDMNS College, T.Kallikulam; ¹Dr.A.Selvin Samuel, Associate Professor of Botany & HOD (Rtd), St.John's College, Palayamkottai. ¹Dr.D.Amish Abragam, Associate Professor of Botany, St.John's College, Palayamkottai - 627 002, Tirunelveli - District, Tamil Nadu

Materials and Methods

The fresh leaves of *Costusspeciosus* were collected from Courtallam hills, Tirunelveli District, Tamil Nadu during the month of August 2018 and their identity was confirmed through literature available in the Department of Botany, St. John's College, Palayamkottai, Tamil Nadu. The shade dried plant samples were ground to fine powder using mechanical grinder. The dried and powdered leaves of *C. speciosus* were extracted successively with 100 g of plant powder and 500 ml of Hexane, Ethyl Acetate, Acetone, Methanol and Aqueous each by using soxhlet extractor for 8 hours at a temperature not exceeding the boiling point of the solvent. The extracts were filtered using Whatman No.01 filter paper and then concentrated in vacuum at 40°C using rotary evaporator. The residues obtained were stored in a freezer until further tests.

Phytochemical screening

The freshly prepared crude extracts of *Costusspeciosus* was qualitatively tested for the presence of chemical constituents. These were identified by characteristic color changes using standard procedures [9].

Fluorescence Analysis

The selected plant powder was examined under ordinary white light and in ultra-violet light (UV 254nm and 366nm). The fluorescent analysis was done [10]. These powders were also treated with various chemical reagents viz., acetone, ethyl alcohol, 1N HCl, 1N NaOH, 50% H₂SO₄ and 50% HNO₃ and subsequently, the changes in colour were recorded.

Determination of the Physico-Chemical Characters

The physico-chemical characters such as total ash, acid insoluble ash, water soluble ash, sulphated ash, moisture content, alcohol soluble extractive values and water soluble extractive values were determined by standard methods of analysis as described in *Pharmacopoeia of India*[11]. The percentages of extractive values in selected solvents were also determined and presented.

Table 1: Preliminary phytochemical analysis of *Costusspeciosus*

S. No	Extract	Saponin	Tannin	Alkaloid	Flavones	Amino acids	Protein	Phenol	Steroid	Triterpenoid	Catachin	Anthroquinone	Sugar	Reducing Sugar	Aromatic Acids
1.	Hexane extract	+	-	-	-	-	-	+	+	+	+	-	+	+	-
2.	Ethyl acetate extract	+	-	+	-	-	+	+	+	+	+	-	+	+	-
3.	Acetone	+	-	-	-	+	+	+	+	+	+	-	+	+	-
4.	Methanol	-	+	+	+	-	+	+	-	+	+	+	+	+	-
5.	Water	+	+	+	+	-	-	+	-	-	+	+	+	+	-

+ present, - absent

Table 2: Fluorescence characters of leaf powder extract of *Costusspeciosus*

S. No.	Treatment	Leaf		
		Visible light	Short UV light	Long UV light
1.	Powder + acetone	Yellowish Green	Florescent Green	Reddish Orange
2.	Powder + ethyl alcohol	Yellowish Green	Florescent Green	Reddish Orange
3.	Powder + 50% H ₂ SO ₄	Yellowish Green	Dark Green	Dark Red
4.	Powder + 1N HCl	Yellowish Green	Dark Green	Dark Red
5.	Powder + 1N NaOH	Yellowish Green	Dark Green	Dark Red
6.	Powder + 50% HNO ₃	Reddish Orange	Florescent Green	Dark Red
7.	Hexane extract	Greenish Red	Dark Green	Reddish Orange
8.	Ethyl acetate extract	Greenish Red	Dark Green	Reddish Orange
9.	Acetone extract	Greenish Red	Dark Green	Reddish Orange
10.	Methanol extract	Light Yellow	Florescent Green	Yellowish Red
11.	Powder + H ₂ O	Light Brown	Green	Reddish Orange

Table 3: Physico – chemical characters of leaf of *Costusspeciosus*

S. No	Type of Ash	% of Ash
1.	Total ash	10±0.21
2.	Water soluble ash	6.26±0.38
3.	Acid insoluble ash	8.7±0.71
4.	Sulphated ash	22.6±0.26
5.	Moisture content	68.25±0.58

Table 4: Quantitative estimation of leaf of *Costusspeciosus*

S.No	Name of the extract	Extractive Value(%)
1.	Water soluble extractive	4.4±0.16
2.	Alcohol soluble extractive	6.6±0.12
3.	Hexane extract	3.9±0.16
4.	Ethyl acetate extract	5.6±0.18
5.	Acetone extract	6.5±0.16
6.	Methanol extract	7.8±0.75

Values are means of three independent analyses of the extract ± standard deviation.

Table 5: Quantitative estimation of biochemical constituents in leaf of *Costusspeciosus*

Active biological compound	Quantity
Lignin (mg/kg-1 / dry wt.)	0.52
Total Alkaloids (mg/kg-1 / dry wt.)	3.56
Total Flavonoids (mg/kg-1 / dry wt.)	3.65
Sugar (mg/g/dry wt.)	3.05
Starch (mg/g/dry wt.)	37.33
Amino acids (mg/g/dry wt.)	2.30
Protein (mg/g/dry wt.)	94.25
Phenol (mg/g/dry wt.)	1.39
Tannin (μ g/g/dry wt.)	13.50
Glycosides(mg/kg/dry.wt)	0.06
Lipid (mg/g/dry wt.)	0.3
Serpentines (mg/kg-1/ dry wt.)	0.06

Results and Discussion

The preliminary phytochemical screening of *Costusspeciosus* leaves shows that the plant contains different types of chemical constituents and the results are presented in Table 1. Saponin, protein, phenol, steroid, catachin, triterpenoids, sugar, and reducing sugar were predominantly present in selected samples. Majority of compound like tannin, triterpenoids, flavones, alkaloid, protein, phenol, catachin, anthroquinone, sugar and reducing sugar present in methonolic extract. Similarly, Thenmozhi and Rajeshwari[12] carried out a phytochemical screening of methanolic extracts of *Alstoniascholaris*, *Lawsoniainermis*, *Ervatamiadivaricata* and *Asparagus racemosus* that revealed the presence of terpenoids, steroids, flavonoids, carbohydrates and some other phytochemicals. The phytochemical analysis of some commonly known plants such as *Annona squamosa*, *Catharanthus roseus*, *Sapindusemarginatus* and *Wrightiatinctoria*[13]. They observed that the methanol and aqueous crude plant extracts of those plant revealed the presence of various secondary metabolites such as alkaloids, phytosterols, phenolic compounds, tannins, flavonoids, coumarin, glycosides, terpenoids and saponins which contain firms the results obtained in this present study.

The fluorescence properties of *Costusspeciosus* leaves have been studied and the colour changes were also observed. The results are presented in Table 2. Owing to the emission of the fluorescent light, the leaf powder showed different colours in various extracts. These fluorescent characters of the selected plants can be used as a diagnostic tool for testing adulterations if any [10]. Drugs like hydrastis, calumba, viburnum and wild cherry bark showed brilliant effects in UV light and may be used as an aid in the identification and to detect certain adulteration [13].

The physico-chemical determinations of powder *Costusspeciosus* leaves are shown in the table 3. The amount of total ash value is 10 %, water soluble ash is 6.26%, acid insoluble ash is 8.7 %, sulphated ash is 22.6%, Moisture content is 68.25%, Water soluble extractive is 4.4%, alcohol soluble extractive is 6.6%, Hexane extract is 2.9%, Ethyl acetate extract is 5.5%, Acetone extract is 6.3% and Methanol extract is 7.8% .

The percentages of extractive values (successive extraction) in different solvents vary from one another. The methanol extracts show the maximum extractive value and Hexane extracts show the minimum extractive value (Table 4).

The high quantity of phenols and flavonoids are found in *Costusspeciosus* leaves. The values of glycosides and serpentines are found only in a very meager quantity in this plant. Carbohydrates are the more abundant than all the organic compounds in the biosphere. The amount of starch is high in this plant (37.33 mg/gdw). The total sugar content (3.05 mg/g dw). The total alkaloids as well as the flavonoid content of methanol extract of the plant leaf is 3.56 and 3.65 mg/kg⁻¹ respectively. In the present findings, the presence of flavonoid has been reported in the selected species. The phenolic content of the plant extract is 1.39 mg/g/dry wt. The existence of amino acids also has been reported in this plant leaf and the quantity of its content 2.30 mg/g dwt. The richest sources of total alkaloid (3.56 mg/kg/dry wt) were reported in this plant (Table 5). Similarly, the phytochemical investigations of *Costusspeciosus* [15-17].

Conclusion

The leaf extract of *Costusspeciosus* indicates their high excellence of potentiality that starts as a source of principles that may supply new medicines. The continuous research work on the same topic will emphasize the isolation and characterization of active principles responsible for bio-efficacy and bioactivity.

Reference

1. UNESCO (1996). Culture and Health, Orientation Texts – World Decade for Cultural Development 1988–1997, Document CLT/DEC/PRO-1996, Paris, France: UNESCO, 29.
2. Nostro A, Germano MP, Angelo V, Marino A, Cannatelli MA. (2000). Extraction methods and bioautography for evaluation of medicinal plant antimicrobial activity, *Lett Appl Microbiol*, 30, 379-384.
3. Krishnaiah D, Sarbatly R, Bono A. (2007). Phytochemical antioxidants for health and medicine. A move towards nature, *Biotechnol Mol Bio Rev*, 1, 97-104.
4. Roy MM and Datta SC (1977). Investigation of *Costusspeciosus* (Koen) sm.as a source of Diosgenin: Part-I. *Indian Drugs*, 15:14-16
5. Dasgupta B and pandeyVB (1970). A new Indian source of Diosgenin (*Costusspeciosus*), *Experimentia*, 26:475.
6. Bavara GH, Narasimhacharya AV RL (2008). *Phytotherapy Research*, 22(5), 620-626
7. Gupta AK, Tondon N, Sharma M (2008). Quality Standards of Indian Medicinal Plants, Medicinal Plants Unit, Published by Indian Council of Medical Research, Vol VII, 2008, 48.
8. Dasgupta B. V. B. Pandey, *Experientia*, 1970, 26(5), 475-6.
9. Brindha P, Sasikala P, Purushothaman KK. (1981). Pharmacognostic studies on *Merugankizhangu*, *Bull Med Ethno Bot Res*, 3: 84-96.
10. Chase CR, Pratt RS. (1949). Fluorescence of powdered vegetable drugs with particular reference to development of a system of identification, *J Amr Pharmacol Assoc*, 32-38.
11. Anonymous. (1996). Pharmacopoeia of India 2nd Ed Manager of Publications, Govt. of India, New Delhi, Pp. 947 – 948.
12. Ben Sassi A, barzallahSkhiri F, Aouni M. (2007). Investigation of some medicinal plants from Tunisia for antimicrobial activities, *Pharm Biol*. 15(5); 421-428.

13. Wallis TE. (1985). Text book of pharmacognosy. 5th Ed, New Delhi: CBS Publishers & Distributers, pp. 68-101.
14. Shalini S, PremaSampathkumar. (2012). Phytochemical screening and antimicrobial activity of plant extracts for disease management. *Int J Curr Sci.*, 209-218.
15. Rastogi RP and Mehrotra BN.(2004).Compendium of Indian Medicinal plants, Central Drug Research Institute, Lucknow and National Institute of Science Communication and Information Resources, New Delhi, 3, 204.
16. Singh SB and Thakur RS(1982), *Phytochemistry*, 21(4), 911-915.
17. Singh SB, Thakur RS (1982). *Journal of Natural Products*, 45(6), 667-71.

Green Construction - Its Responsiveness, Perception and Significance- a study report conducted among selected architects in Ernakulam district, Kerala

Sangeetha Simon*

Treesa Sindhu P.Thomas**

Dr. Leena Leon***

Abstract

Today, green building technology and construction practices contribute significantly towards achieving sustainable living. A green building or sustainable building promotes multifold benefits to its occupants. Green designing is a comprehensive process of design and construction that employs techniques to minimize adverse environmental impacts and reduce the energy consumption of a building, while contributing to the health and productivity of its inhabitants. According to the World Commission on the Environment and Development, sustainability is “a form of development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Green building concepts extend beyond the walls of buildings and can include site planning, community and land use planning issues as well. The primary aim of the study was to determine the green building practices in the housing sector in Ernakulam. The study also tried to find out the popularity of Green Building concepts among architects. The objectives were to understand the commonly accepted green building practices and designs and to find out the knowledge, attitude and practices of architects towards green building concepts. The method used for the study was survey and detailed questionnaire was formulated to collect the necessary information. Study was conducted among 30 architects. From the study, it was noted that majority of the architects failed to convince their clients about green initiatives and its benefits especially savings in operational costs. The awareness of people on the need and relevance of green home practices was very poor, so it is the need of the hour to create ‘green awareness’ among people to practice, construct and popularize green buildings key towards achieving sustainable living.

Key Words: Environment, Green building, ecofriendly, sustainability

Introduction

Since, the energy consumption is increasing and Green House Gases (GHG) is going up, the climate is rousing unstable universally. The air is getting warmer - summer comes quicker in nearly all continents. The glaciers nourishing water for the Ganga are melting more rapidly than it should. This would run off over 50 million people thirsty who are living on the banks. Carbon dioxide dissolved in ocean water becomes a corrosive acid which kills sea life.

*Former Post Graduate student, Dept of Home Science, St. Teresa's College, Ernakulam

**PhD Scholar, Dept .of Home Science, St. Teresa's College, Ernakulam

***Assistant Professor, Dept. of Home Science, St. Teresa's College, Ernakulam

The development and advancement of our communities largely affects our natural environment. The manufacturing, design, development, and task of the structures in which we live and work are in charge of the utilization of a large number of our natural assets. Bruntland Commission characterizes sustainability as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This definition shapes our approach at Environmental Building Strategies from the determination of a sustainable building site through development to the choice of tools. Realistic plan depends on the belief system that the assembled condition should grasp nature and its procedures as the benchmark for its development. As the building industry quickly changes, demand has moved towards energy efficient, sound structures that consume less valuable resources than their counterparts. Demand is rising for the consumer market to meet new environmental standards adding pressure to builders and developers struggling to keep on task while remaining below budget.

Green construction, or sustainable plan, is the act of expanding the productivity with which structures and their locales utilize energy, water, and materials, and reducing building impacts on human wellbeing and the environment over the entire life cycle of the building. Green building ideas reach out past the barrier of structures and can incorporate site arranging, network and land utilize arranging issues too. Green means nature and all that is common, which is the plain pith of existence. Green is the symbol of life, fine health, and power and it represent hope. All around the world, the word is related with energy preservation and natural protection. Green building symbolizes most important and exciting opportunities for sustainable development on both a national and a worldwide scale. The design of our constructed environment impacts every one of us and in addition our economies and the natural environment, and Green Building Councils in driving its change towards sustainability.

Green building upgrades and protects biological systems and biodiversity and also enhances air and water quality of the greater community. Green structures can cost-effectively utilize 40% less energy than equivalent standard buildings – Therefore our skill with ENERGY STAR building practices will profit both individual and the community at large. Barely any individuals would scrutinize the benefits of building green on the off chance that it implied a more advantageous structure with bringing down utility bills and a lesser carbon impression. It seems the issue of First Costs, simplicity of usage, and product availability has hindered manufacturers and designers from making step toward environmental friendliness before. As indicated by the U.S. Green Building Council, —The net expense of owning a green home is similar to – or much less expensive than – owning a standard home. On the off chance that direct expenses are higher, it is regularly in light of the fact that many Architects, homebuilders, engineers, plumbers and other industry experts don't have the information and experience to cost viably, plan, outline and build a green home.

Living in a green home or working in a green building allows individuals a more beneficial and a healthier way of life. Green structures regularly utilize poison free building materials to help battle indoor air contamination that poses serious health dangers for residents, including tumor and respiratory diseases like asthma. Such non-harmful materials incorporate wheat-determined strawboard, regular flooring produced using jute and linseed oil, paints with practically no unstable natural mixes and poison free protection produced using soybeans, reused paper or even old denim. Likewise, green buildings have far less

issues with shape and regular ventilation in green homes channels and bring natural air inside and vents stale air outside, keeping tenants breathing simple. Natural Building Strategies comprehends individuals' craving to make a more advantageous, more joyful, more gainful way of life and whether they meet their objectives through full scale advancement or little enhancements to the current buildings, at all times.

Green buildings can control impacts - positively or adversely - in various areas, not just in the task of the building itself. The innovations for reducing dependence on water, energy and other assets are prepared and waiting; however it isn't just about what goes ahead inside the building. By collecting and utilizing rain water and grey water, downstream issues are decreased and upstream water is accessible for other people. By planning for solid indoor air quality, stacks on the health care system are decreased.

A green Building utilizes less energy, water and other natural resources, creates less waste and Green House Gases and is sound for individuals during living or working inside when compared with a standard Building. Another significance of Green Structure is clean environment, water and healthy living. Building Green isn't about somewhat more effectiveness. It is tied in with making structures that improve on the nearby ecology, utilization of local materials and above all they are worked to cut power, water and material prerequisites. Therefore, if these things are remembered, at that point we will understand that our conventional design was indeed, exceptionally green. Today, we have overlooked that how to make regular habitat, rather replicating it from created nations. The point of a green building configuration is to limit the interest on non-sustainable assets and increase the usage productivity of these resources when being used and utilization of renewable resources.

The ideas of sustainable building integrate and synchronize a range of methodologies during the design, development and task of building ventures. The utilization of green building materials and items represents one vital strategy in the outline of a building. As over 40% populace is living in the urban communities so these refers to ought to be made Sustainable first. Engineers and organizers should begin thinking green in the planning of Buildings. It very well may be a gift for the quick creating nation like India that the measures called for economical advancement can be the proportions of neediness lightening and additionally sustainable development and reprocessing of waste. Green building is a quickly evolving field, and it appears to be likely that what we call "green" now will end up being the standard choice long time from now.

Aim and Objectives

The study aims to find out the popularity of Green Building among architects. In order to achieve this aim certain objectives had to be met:

- To determine the current trends in building designs and construction practices
- To determine the popularity of green building concepts and designs among architects.
- To find out the knowledge, attitude and practices towards promoting green building among architects.

Methodology

The area selected for the present study was Ernakulam District. Since the study aimed to find out the awareness, adoption and practice of green home practices, 30 architects were selected from Ernakulam district using random sampling technique. The tool used to collect the information was an interview schedule. The interview schedule was designed to elicit the information pertaining to the knowledge about green buildings it's practice and

promotion among customers. The data collection was conducted by investigator, by approaching the architects personally and explained the purpose of study. The investigator handed over the questionnaire and collected the filled form at a later date. The data collected was tabulated, consolidated and analysed using percentage analysis.

Results and Discussion

General survey conducted among the architects to determine whether they are incorporating green design into their designs and whether there is a bigger demand for green designs by their clients. It was also checked whether information and training were available to all their employees, if recycled and environmentally friendly materials were included in their designs, whether it is difficult to retrieve these green materials, and if they find it more expensive to design a green building.

1. Concept familiarity

Parameters N=30	Specifications	Responses in percentage (%)
Familiarity of Green Building Concept	Very poor	11
	Poor	31
	Average	48
	Good	3
	Very good	7

Among the respondents (48%) of them had a fair knowledge about green buildings, its techniques and practices. 31% of the respondents were least aware on it. Only 3% of respondents have good knowledge about building Green and 11% had little or no knowledge about Green Building.

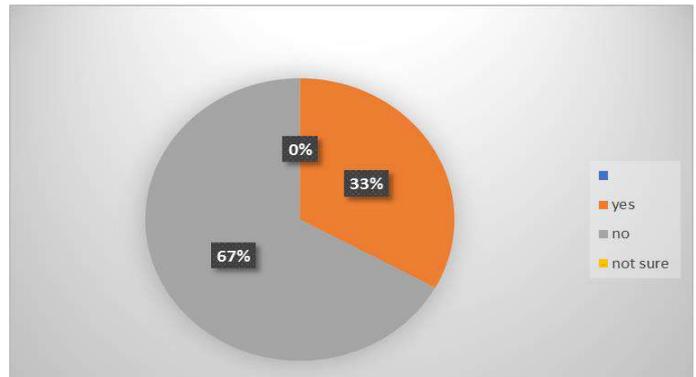
2. Architects understanding about Green Buildings

Parameters N=30	Specifications	Responses in Percentage (%)
Understanding of the term Green Building and Green Building aspects	Reduce wastage and creates healthy environment	53
	To make use of maximum solar energy by designing open space	27
	Constructed with natural building materials, maximum utilization of natural sources and designing open spaces to utilize maximum sunlight	20

Majority (53%) of the subjects stated that green building is that building that helps in reducing wastage and thus creates healthy environment. About (27%) stated that these buildings help in maximum solar energy usage. And the remaining (20%) respondents stated that this building is constructed with natural and recyclable materials.

3. Architect's involvement in a Green Building project

Study reveals that, about (67%) of the respondents were not involved with Green Building projects due to the lack of interest by the clients and the rest 33% had incorporated some of the green building construction techniques in the respective projects they were associated with.



4. Recent developments in the green building concepts and architect's involvement

Parameters N=30	Specifications	Responses in percentage (%)
Details about recent type of development	Constructed with recyclable and natural materials	27
	Open courtyards to utilize maximum sunlight	27
	Vertical farming	17
	Constructed with mud bricks	9
	Designed homes without harming the trees In the background and was cut really minimally	47

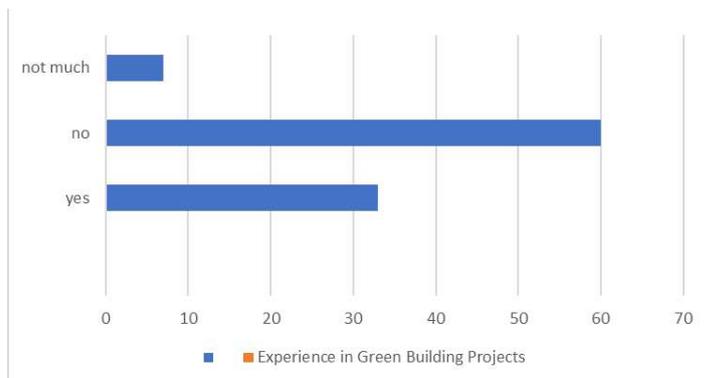
About 47% of the respondents have designed homes without harming the natural vegetation in the background and the trees were cut minimally. 17% did vertical farming as part of their green construction, 27% of respondents incorporated bamboo to their construction and the remaining 9% have constructed the buildings using mud bricks.

5. Awareness of architect's about Green Building concepts

Parameters N=30	Specifications	Responses Percentage (%)
Green Buildings are good for environment, how so.	Depends on client	7
	Helps to reduce pollution and earth gets less hot, and less impact on environment	23
	waste material from the demolished buildings are	
	Reused thus make it cost efficient and help preserving natural environment	49
	Reduce carbon footprints	21

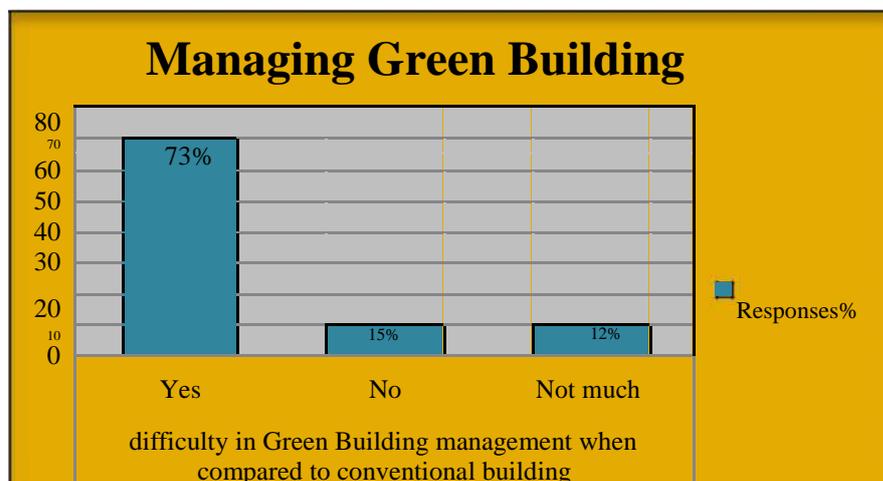
Majority (49%) of the respondents stated that the waste generated from the demolished structure were reused and thus preserving natural environment, 23% of them stated that green buildings helped in reducing pollution thus ecofriendly. The remaining 21% stated that green building construction helped to reduce carbon footprints.

6. Experience in Green Building Projects



Among the 30 Architects studied, more than half (60%) of the respondents stated that they did not have any experience in Green Buildings construction practices while (33%) had opined they had some kind of exposure in building green houses.

7. Management of Green Building



Majority (73%) of the respondents stated that there was difficulty in Managing Green Building construction when compared to conventional buildings due to its higher construction cost. Remaining 15% stated that there is not much difficulty in managing green building since they did not have much exposure so they were under experienced in the management practices regarding Green Building.

8. Comfort provided by the green buildings to occupants



From the study it was revealed that (80%) of the subjects believed green buildings provided healthy environment for the occupants.

9. Encouragement given to staff members

Parameters N=30	Specifications	Responses in percentage (%)
Encouragement given to staff members to set expertise in Green Building	Yes	23
	Always	30
	Not much	47

About 23% of the respondents stated that they encourage staff members to get expertise in Green Building construction and 47% stated that they did not give much encouragement to their staff members just because their company did not encourage green building practices.

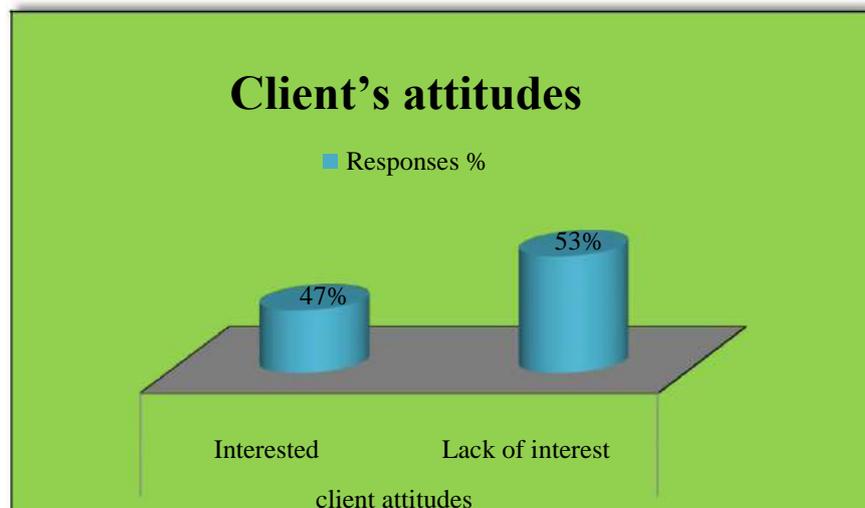
10. Promoting Green Building among clients



About 49% of the respondents stated that they did not have much marketing strategies for the promotion of green buildings since the clients were not much interested in green concept. About 24% stated that their company was promoting green building practices so in Green Building practices and would persuade clients

in building green.

11. Information about client's attitude on green building



About 53% of the respondents stated that their clients had little or no interest in green building construction practices while the remaining 47% were interested in constructing green building.

12. Reason for lack of involvement in green building practices

Parameters N=30	Specifications	Responses in percentage (%)
Reason for lack of involvement in Green Buildings	Owner and contractor set in building material specifications it relates to the overall costs and past experience	27
	Lack of clients interested in Green Building construction	60
	Lack of self interest in the green building concept	13

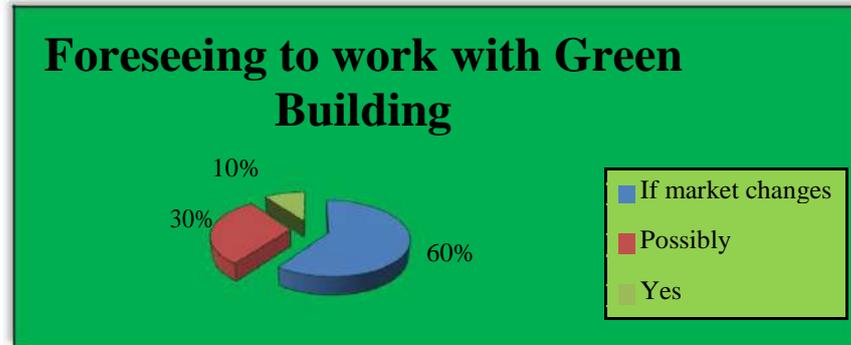
It has been proved that, 60% of the clients are not interested in Green Building since they have little knowledge about building green. 13% of the respondents lack interest and 27% stated that owner and contractor of the building set in building material specifications that relates to the overall cost and past experience.

13. Barriers in Green building

Parameters N=30	Specifications	Responses in percentage (%)
Barriers to working with Green Buildings	Higher initial investment costs	53
	Cost, availability and benefits realized relative to scale	20
	Additional constructional costs, paper work cost and cost of LEED submittal	17
	the relatively short operating life of green facilities	10

The various barriers of green buildings that were stated include higher initial investment costs that have been stated by the majority (53%). About 20% considered cost and availability of the materials as a barrier in building green and 17% stated that green building needs additional constructional costs, paper work costs and LEED submittal costs and the rest 10% stated that the relatively short operating life of the green facilities which did not assure any warranty thus restrict them to go for such construction.

14. Foreseeing to work with Green Building



About 60% of respondents stated that they foresee themselves to work with Green Building only if the current trends building construction market in changes. About 30% had a positive outlook to work with Green Building in the near future and the remaining 10% would definitely wanted to involved themselves with Green building construction practices may be due to protect their customer interest towards Green Building.

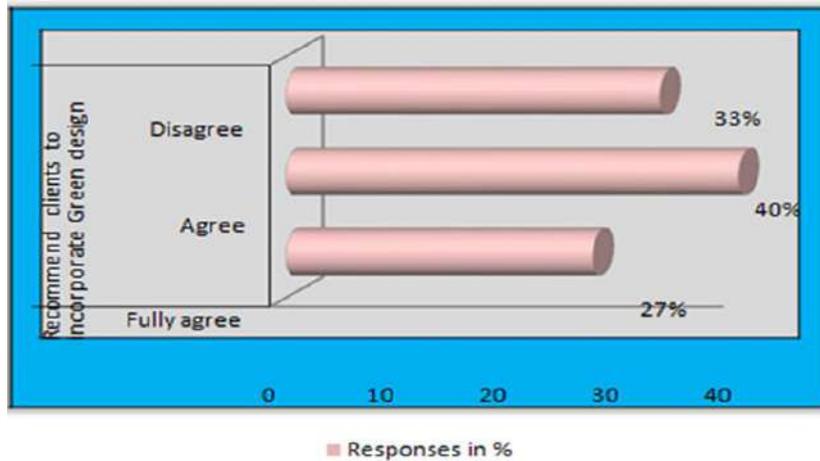
15. Persuading clients towards building Green

Parameters N=30	Specifications	Responses in percentage (%)
Persuade clients to attempt Green Building	No	27
	Attempted with no results	0
	Clients are not interested	13
	Others	7
	Yes	53

From this table it has been proved that about 53% of the respondents persuade their clients to attempt Green Building practices but 27% of the respondents did not persuade their clients due to their lack of interest. 13% of the clients itself are not interested in Green Building due to their lack of knowledge about its merits.

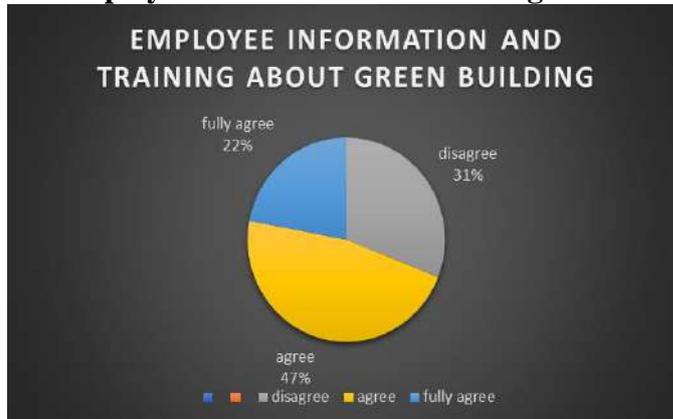
16. Recommendation to clients

Figure No: 13: Recommendation to clients



About 40% of the respondents recommend their clients in constructing green buildings. But 33% not recommend clients in building green because they themselves have lack of experience in building green.

18. Employee information and training about Green Building



About 47% of the respondents provided information and training about Green Building to all employees and 31% does not provide much information about Green Building to the employees due to their lack of interest and disinterest of clients to construct green building.

Conclusion

The result shows that, we are still facing challenges, particularly in terms of public understanding and awareness in Green building. Architects and Builders fail to convince the clients and are not much involved with Green Building projects due to the lack of interest by the clients. It is a common belief that green buildings are costlier than normal buildings. But in reality, they consume less resource, and improve the health and productivity of its occupants. Another positive fact is that construction waste management adopted in green building construction not only saves money, but it actually generates a profit through recycling, while providing a cleaner, safer workplace. With the stable need for adopting more sustainable practices in order to stop the worst things to happen to the environment is promote "green buildings." So the study emphasized the need of massive awareness building among stakeholders of construction sector thus together we can achieve sustainability and a healthy and happy place to live.

References

- Beatley T. (2000), Green urbanism: Learning from European cities. Washington, DC: Island Press.
- Goldemberg and Johansson (2004), World Energy Assessment Overview 2004. New York: United Nations Plaza.
- Gotze H (1988), Roof Planting from Constructional Viewpoint. Garten und Landschaft98: 52-55.
- Johnston J and Newton J (2004), Building Green: A guide to using plants on roofs, wallsand pavements. London: Greater London Authority
- McLennan J. F (2004), The Philosophy of Sustainable Design. London: Oxford University Press.
- Novitski B.J (2010), It isn't Easy Gardening Green. Green Source Magazine Mei: 1-2
- Rassa D.R (2007), Assessment of effectiveness and limitations of habitat suitability models for wetland restoration. U.S. Geological Survey Open File Report 2007: 54-136
- Register R (1987), Eco city Berkeley: Building cities for a healthy future. North Atlantic Books.
- Rhodes S .L 1997. Climate and Environmental Degradation of the Great Lakes. Journal of Environmental Systems 22: 105-122.
- Williams K, Burton E and Jenks M (2000), Achieving Sustainable Urban Form. London: E &FNSpon.
- WRIC (World Resource Institute): Cities and the Environment 1996.
- Smith A.P 2010.The Problem with combined heat and power. [Online]. Available from:[http://www.toolbase.org/HomeBuilding topics/Energy-Efficiency/combined-heat-power](http://www.toolbase.org/HomeBuilding_topics/Energy-Efficiency/combined-heat-power)(Accessed 3 March 2011).
- Terry A and Moore T (2012), Waste and sustainable commercial buildings [online]. Available from: [http://: crc/construction/innovation/website](http://crc/construction/innovation/website) (Accessed 15 October 2012).

Employee Engagement in Handloom Centres At Thiruvananthapuram

Vinod.S*

Dr. N.Gladstone Joy**

Abstract

This paper aims to present the relationship between employee engagement and employee satisfaction on the light of the case study done among weaving employees at Thiruvananthapuram district of Kerala state. The concept of employee engagement and satisfaction has its immense relationship to develop the organization. It is one of the vital term related with employee development. Employee engagement is a new term which is used in the mid of 1990's. Mostly it is used in the area of Human resource management. Employee engagement simply means the dedication and commitment of employees towards the organization and how it will affect the growth and development of the same. Nowadays Human resources are one of the important assets in an organization. The complete development of the firm shall be depends on the ability and skills rendered by the employees in to the organization. Weaving industry is one of the ancient and traditional business worlds in small scale business industry. Lot of employees is working under the same category in the rural areas of Thiruvananthapuram district of Kerala. Many of them are acquiring their livelihood from the income what they getting from this industry. Satisfaction of employees in this field helps to create more output and generate growth of this sector too. In this study mainly concentrating to know about, in what extend the employees are committed to the work and the drivers of engagement behind their participation of work etc.

Key words: Engagement of employees, satisfaction of employees, engagement drivers, weaving industry, human resource management etc

Introduction

The weaving industry in Indian business scenario begins in the last of 1733 after the invention of weaving machine named flying shuttle invented by John Kay. The first factory of weaving industry began in 1785. In Kerala this business popularly known as Handloom industries. Many local people and employees were actively engaged to uplift the same industry. It is comes under the category of small scale business. In Kerala SIDCO (Small Industries and Development Corporation) promoting such types of industries for its growth and development. It is the major traditional industry in Kerala. In the context of Trivandrum district of Kerala, handloom industry setup as small factories in different zones. The city named Balaramapuram is famous for handloom and weaving centers. These are working under the support of government and cooperate sector. It plays a vital role in the field of generating employment opportunities and increasing GDP of the state. Even though factories are facing many problems due to unavailability of raw

* Research Scholar (Commerce, Reg.No-17233111011022 ManonmaniamSundaranar University, Tirunelveli)

** Associate Professor, Dept. of Commerce NMCC, Marthandam

materials and lack of employees for doing particular task concerned with. Many of looms are placed in different corner of Kerala. Rural peoples are depending this industry for their livelihood in a vast manner. Especially women entrepreneurs and workers are ready to spend their time to the particular industry. Apart from this nowadays the same affecting with many challenges and problems. Employee's engagement is very required for the active development of handloom industries. Weaving employees and their dedication is necessary. However, the managers and owners are not always given much more important to the employees, like unfair treatment, low wages, lack of facilities etc. For the reason why employees are dropping out regularly. There are many drivers or factors which are affecting for employees engagement in weaving centers and handloom factories. The directorate of Handloom and textiles under the Ministry of Commerce and Industry allow and heading the control over handloom industries in Kerala state. The initiative of government also promoting finished handloom products to export in various part of the world. Hereby the participation of employees is necessary and important in all respect.

Literature Reviews

A brief description of employee engagement reviews are given below:

1. According to **Ruth Sirman (2008)**, Collaborative Leadership is a sound solution to complex problems at workplace. The study explains the Management style that is helpful to reduce maximum conflict in the organisation. The selection of charismatic and modern leadership style may helps the management to achieve maximum result with less effort.
2. According to a survey conducted by **George Kohrieser (2007)**, there are six essential skills for managing conflict. The researcher states that some conflict is required and essential for management to know their strength and weakness. Decision making power of employees also determined the conflict level exist in the workplace.

Scope of the Study

Nowadays employees are being as important asset of an organization. It is important by an organization to ensuring the welfare and capability of them in an efficient manner. In the handloom industry many employees are working in different sector like weaving, production, finishing, and packing marketing and exporting of finished products. The Industry is dedicating a huge place for the improvement of economic development. It covers under small scale industries. In Trivandrum area, variety of factories is rendering the services in small scale sector. Here, the participation and dedication of employees are very essential. This study proven the relationship between employees engagement among weaving and handloom industry.

Objectives

1. To identify the employees engagement in handloom factories.
2. To know the various factors affecting engagement in weaving factories
3. To understand the importance of employee engagement in handloom industry
4. To mention findings and suggestion according to the above

Hypothesis

H0: There is no significant relationship between engagement factors and production

H1: There is significant relationship between engagement factors and production

Collection of Data

This study covers primary and secondary data. The primary data collected from employees working among weaving centers and factories. The secondary data collected from books and journal

Methodology

Sample design

The samples are taken from employees who were working under weaving factories in different part of Thiruvananthapuram district. For this study took 300 numbers of employees out of 450 respondents from various weaving factories.

Analysis and Interpretation

In this part contain analysis and interpretation of primary data collected from employees according to their responses.

Factors Affecting Employee Engagement

Engagement factors	Agree	Disagree	Neutral	Total response
Relationship with co workers	10	14	6	30
Culture of the organization	18	10	7	35
Pay and allowances	12	8	14	44
Dispute settlement system of firm	3	5	3	11
Training and orientation	7	17	12	36
Environmental factors	11	7	9	27
Chances of personal growth and development	5	9	9	23
Suitable job character	13	4	8	25
Support from superiors	11	16	13	40
Fringe and non monetary benefits	10	5	14	29
TOTAL				300

Hypothesis Testing

H0: There is no significant relationship between engagement factors and production

H1: There is significant relationship between engagement factors and production

Z –Test (Two tailed test)

Let, H0: $\neq \mu$

H1: $= \mu$

N=300 SD= 50 $\bar{x} = 525$ $\mu = 450$ 5% (LOS- 0.005 is 1.645)

$$Z = \frac{\bar{x} - \mu}{SE}$$

The result will be shows

SE=17.32

Difference =75

So the Z test value =**2.88**

Thus it is reached out that, the test statistic is greater than the critical value in the Z table.

So the reason why rejected the null hypothesis and accept the rest.

Findings

1. In handloom sectors employees are highly engaged in their works
2. The various internal and external factors directly affect them for producing more output
3. It is understandable that highly engaged employees are too productive
4. If the industry provide beneficial rewards to the employees they become more effective in work,

Conclusion

Handloom industries are one of the important traditional industries in Kerala. It provides a well platform to the workers to getting more benefits from their production. Wage rate system follows in this industry is very effective for the workers. High enrichment and benefits make them more productive and associative towards the industrial development. In this paper also clear out the benefits of engagement factors in the same industry.

An Analytical study of Identifying Psychotherapeutic Intervention in Prisoners

Sagar Masih*

Prof.Dr.G.Sheela Reddy**

Abstract: Psychological well-being is characterized as a condition of prosperity in which each individual understands his or her own potential, can adapt to the typical worries of life, can work beneficially and productively, and can make a commitment to her or his group. The human body reacts to stressors in an exceptionally uncertain manner. There are numerous powerful medications for mental issues, however frequently the constrained accessible assets are squandered in insufficient, costly intercessions and administrations that exclusive achieve a little extent of those in need. The working of partitioned psychiatric jail healing centers specifically is not savvy, since they are exceptionally costly to run, they have a constrained limit, are related with low discharge rates, and they frequently leave the person with an extreme and tireless disgrace. Many work outside of the wellbeing offices in charge of controlling the nature of wellbeing interventions. Moreover, there is no confirmation that these costly healing facilities enhance treatment results. Or maybe, these doctor's facilities can put inmates at danger of human rights infringement. In this article, we analyzed the current status of 300 prisoners, usages of drugs before coming to the jail and the steps taken by integrated Drug treatments to detox them and compare Pre and Post psychotherapeutic intervention test using Paired T-Test and lastly doing a reliability test on it. It was found that Mean score of Positive Pre is higher than Positive post which shows that before intervention test, stress level was high among the prisoners however post intervention it has been reduced significantly. For Pair 2, Negative Pre is lower that means for stress level was higher before intervention test and it has been significantly reduced posttest.

I. Introduction

Regardless of whether a man is experiencing a separation or is late for an essential meeting, the physiological reaction is the same. While, psychosomatic piece of the anxiety changes with the investigation of a circumstance that individual is in as any stressor relies on upon identity discernments. These sort of perceptual changes rely on individual's encounters with his/her life. A human body's reaction to steady anxiety can be exhaustive; it demonstrates a display of different types of stress that can have diverse wellbeing outcomes. Since the jail populace has a tendency to be detained for longer periods than prison inmates, treatment conceivable outcomes in a jail setting are broader, contingent upon financing and different elements. Instructors and jail executives may build up projects that are long haul and exhaustive. Substance mishandle issues might be tended to alongside behavioral, passionate, and mental issues. Preferably, inmates have the chance to keep away from substances and learn new practices before discharge. Incarcerated prisoners are set apart by extensive assorted qualities, yet they share a typical ordeal of

*Department of Nursing, Shri Venkateshwara University, Gajraula (Amroha) – Uttar Pradesh

**Principal, SDPS College of nursing, Indore(M.P)

detainment. Jails can be vicious, unforgiving, mentally harming situations; detained individuals live in a domain that is both depersonalizing and dehumanizing. In addition, the social disgrace related with detainment, consolidated with the depersonalizing impacts of detainment, may bring about a feeling of sadness and frailty, and additionally profoundly disguised disgrace and blame. In this manner, notwithstanding treating substance manhandle and other mental issue, the accord board suggests that in-jail treatment additionally address the injury of the detainment itself and in addition a prison culture that contentions with treatment objectives. Tending to emotional well-being necessities will enhance the wellbeing and personal satisfaction of both inmates with mental issue and of the jail populace overall. By advancing a more noteworthy comprehension of the issues confronted by those with mental issue, shame and segregation can be diminished. Eventually, tending to the requirements of individuals with mental issue enhances the likelihood that after leaving jail they will have the capacity to conform to group life, which may, thusly, decrease the probability that they will come back to jail [1]. Jail wellbeing can't be tended to in seclusion from the strength of the overall public since there is a steady between change between the jail and the more extensive group, be it through the watchmen, the organization, the wellbeing experts and the consistent affirmation and arrival of inmates. Jail wellbeing must in this manner be viewed as a piece of general wellbeing. Tending to the psychological well-being requirements of inmates can diminish episodes of re-culpable, decrease the quantity of individuals who come back to jail, assist occupy individuals with mental issue far from jail into treatment and recovery and at last lessen the high expenses of prisons.

II. Indian Prisons

"Prison" is equivalent word of "Prison" or "Correctional facility" or 'Jail', has been characterized as a place appropriately orchestrated and prepared for gathering of people who by lawful process are focused on it for safe authority while anticipating trial or for discipline. Amid the time of the Sultanates managing in Southern India, there were no general Prisons. There were just old fortifications and palaces which were utilized as detainment facilities. At the season of control of Emperor Akbar, there were two sorts of Prison's is being used. They are, one which held culprits who had carried out genuine offense and other one which was concentrating primarily on normal crooks [2]. Attributable to the absence of across the board usage of preoccupation projects, for example, psychological wellness and medication courts at the front end of the criminal equity handle, more individuals with these morbidities are entering jails than any time in recent memory. At the back end, around 50 percent reemerge jails inside three years of discharge (a marvel known as reusing), as a result of insufficient treatment and restoration in the group. Efficient projects connecting discharged rationally sick offenders to state psychological wellness projects are few and far between. The quick post-discharge period is especially dangerous for suicide and different reasons for death. Prisoners being discharged from jail are especially helpless against genuine backslide from the impacts of medications and liquor inside the primary month of discharge. While in jail, most prisoners get negligible therapeutic treatment for substance mishandle, with the exception of detoxification. Long haul backslide counteractive action is restricted to self-improvement gatherings, similar to Alcoholics Anonymous, and helpful groups [3].

The unmistakable intense side effects of withdrawal disperse inside a couple days of imprisonment. Upon discharge, substance-mishandling offenders come back to a signal

rich condition of past medication utilizes that can trigger a capable reviving of the habit. This well-known condition brings about the indication of physical side effects like intense withdrawal, known as adapted forbearance. Adapted restraint can happen even before discharge, when patients review past medication utilize, and has been appeared in research center reviews in which introduction of previous medication clients to medication stuff activated exceptional longings likened to intense medication withdrawal, despite the fact that patients had not utilized medications for a considerable length of time.

A. Stress and Psychiatric disorders in Prisons across the world

Mental disorders are quick turning into the significant general medical issue even in underdeveloped nations. They are available in all societies and social orders. It has been discovered that the commonness of mental issue in the Indian populace is to be 8-12%. Even all the more condemning that at any given point in time, a high extent of those with emotional wellness issues are imprisoned in the Prison. Prisoners have more noteworthy physical and psychological wellness needs contrasted with the overall public. The pervasiveness of mental issue in Prison's is high, yet access to administrations to treat them is regularly low. All these details give us a scarring somber take a gander at how psychological wellness of inmates is being seen at by the state and the general population in charge of welfare of inmates [4].

B. Unbearable factors affecting psychiatric health of prisoners

Factors in prisons that may antagonistically influence psychological wellness incorporate congestion, messy and discouraging situations, poor sustenance, lacking social insurance, and physical or verbal hostility. Absence of intentional movement, absence of protection, absence of chances for calm unwinding and reflection irritate mental pain. The accessibility of illegal medications can compound enthusiastic and behavioral issues in jail. Responses of blame or disgrace, tension of being isolated from family and companions and stresses over the future additionally compound such mental pain. Opportune distinguishing proof, treatment and recovery are nearly non-existent in numerous Prisons, especially in the creating nations. In a few nations, rationally sick individuals are improperly secured up prisons as a result of deficient emotional wellness administrations. In numerous others, individuals with substance manhandle issues are regularly sent to jail as opposed to for treatment. In created nations where institutional administer to the rationally sick has declined and group care is not ideal, detainment facilities have moved toward becoming caretakers of people with emotional sickness, which is additionally called as "trans-standardization" [5]. In such nations, it is outstanding that people with emotional instability mope in Prisons for quite a long while as they are unfit to stand trial. Prisoners in the creating scene, notwithstanding having large portions of the issues confronted in Prisons of the created nations, have extraordinary difficulties. These incorporate insufficient correctional and legal frameworks and Prison assets, with resultant postponements in access to equity and rapid trial. Insufficient regard for the human privileges of people in Prison, including the privilege to nice living, spotless and amiable presence, quick trial, data and correspondence and ideal to social insurance, especially psychiatric medicinal services, additionally irritates the circumstance.

Less serious treatment projects may essentially convey advising, training, and other treatment benefits in a way like outpatient projects. Inmates live in the all-inclusive community and have assignments or arrangements for administrations. Cases incorporate week after week or twice-week by week singular treatment, week by week bunch

treatment, or a mix of the two in relationship with self-improvement exercises. Despite whether treatment happens in a TC or as detached outpatient sessions, force by and large reductions after some time as the individual meets treatment objectives and travels through the phases of recuperation [6].

C. Need for stable and reliable measures across systems and cultures

While there is ample theoretical basis for anticipating that prison social climate may directly or indirectly impact inmate behavior in the prison as well as on release, empirical data to date have only looked for immediate situational effects. In order to determine what is any impact prison climate has on more distal behaviors after release or relating to interactions with prison training programs, effective, reliable and valid measures of prison social climate are required. Prison climates will themselves reflect the dominant penal systems and ideologies of the society within which they are embedded. With wider penal cultures, prevailing moral climates impact attitudes, which in turn shape treatment of prisoners. Comparing prison regimes across any dimension, particularly between countries, is difficult: there may be as much variation within a national system as between systems. For example, in the US, the 50 state prison systems and the Federal prison system are derived from different legislatures and based on different histories and cultures. Even within a particular prison, the climate may vary between wings, between shifts, and between governors or wardens.

III. Psychiatric Problems in Prisoners

Anxiety or tension is our body's method for revealing to us that something is turning out badly and we have to right it. It is a significant flag, vital for our survival and prosperity. In the event that primitive people did not have sustenance, the restless suspicion of appetite inspired them to discover nourishment. On the off chance that a laborer hasn't been profitable yet today, the dread of feedback from a chief or collaborator helps him/her get occupied. The recognition, counteractive action and legitimate treatment of mental issue, together with the advancement of good emotional wellness, ought to be both a piece of the general wellbeing objectives inside jail, and vital to great jail administration. Indeed, even in nations with restricted assets, steps can be taken that will enhance the emotional wellness of inmates and jail staff, and these means can be adjusted to the social, social, political and monetary setting inside that nation. Some of the time the desire of inconvenience or peril isn't right; we overstate the issues or wind up noticeably tense for reasons unknown. At different circumstances, the notice is exact yet there is no hope, and we fuss unnecessarily about our failure to change the circumstance. At times, we have this anxiety caution going off, however we don't recognize what isn't right. In each of these cases, we are mentally and real every one of the worried to run or battle an adversary, however the genuine foe (the maker of the terrifying circumstance) is us. Clearly, a noteworthy issue is differentiating between reasonable, accommodating strains, fears, or stresses and unlikely, unfortunate anxiety. This is on the grounds that we as a whole could begin fussing about some conceivably upsetting occasion at whatever time. Dangers are surrounding us [7].

Access to evaluation, treatment, and (when essential) referral of individuals with mental issue, including substance manhandle, ought to be a fundamental piece of general wellbeing administrations accessible to all inmates. The wellbeing administrations given to inmates ought to, as a base, be of an equal level to those in the group. This might be accomplished by giving emotional well-being preparing to jail wellbeing laborers, building

up standard visits of a group psychological wellness group to detainment facilities, or empowering inmates to get to wellbeing administrations outside the jail setting. Those requiring more master administer to illustration, can be alluded to expert psychological well-being suppliers where inpatient evaluation and treatment can be given. Essential social insurance suppliers in detainment facilities ought to be furnished with fundamental preparing in the acknowledgment and fundamental administration of regular psychological well-being clutters.

A. Emotional intelligence and prison populations

Despite the fact that the writing on Emotional Intelligence (IE) is broad especially in connection to Education and Leadership/Organizations, that on the relationship amongst EI and prison inmates is somewhat constrained. Having said this, one finds that the archive entitled Research Report: A Review of the Emotional Intelligence Literature and Implications for Corrections is exceptionally broad, and is valuable for those whose work is somehow identified with instruction and preparing in jail. Enthusiastic Intelligence (EI) indicates the procedure required in perceiving, utilizing, understanding and dealing with the passionate conditions of one's self as well as other people in controlling conduct and exploring issues of a passionate nature [8].

B. Antisocial personality disorder among prison inmates

Antisocial Personality Disorder (ASPD) is depicted by the American Psychiatric Association's Diagnostic and Statistical Manual, fourth version; as an Axis II identity issue described by " ...an unavoidable example of nonchalance for, and infringement of, the privileges of others that starts in youth or early youthfulness and proceeds into adulthood". The World Health Organization's International Statistical Classification of Diseases and Related Health Problems', tenth release (ICD-10), characterizes a theoretically comparative issue to reserved identity issue called Dissocial Personality Disorder. Despite the fact that the demonstrative criteria for ASPD were situated to some degree on Hervey Cleckley's spearheading take a shot at psychopathy, ASPD is not synonymous with psychopathy and the analytic criteria are distinctive. Solitary identity issue (ASPD) is a mental issue that includes utilizing others, controlling them, even to the degree of abusing their rights. This long haul issue, which is more typical in men than in ladies, frequently has criminal indications. It is a normal and steady conduct of dismissal or lack of regard for, and mishandle of, the flexibility, rights and benefits of others. It begins ideal from youth start of immaturity and delays to adulthood'. Generally, criminal signs as a youngster are frequently connected to the improvement of this issue later on in life. Cold-bloodedness to creatures or more youthful kin and harm to property among others are indications of reserved identity issue, which detainee's shows. Inmates are from various financially and socially hindered situations, describe by substance mishandle, family disturbance, and other traumatic encounters. The inmates have encountered numerous more conceivably harming educational encounters than their never detained partners. Notwithstanding common experiential hardships, inmates additionally show high rates of mental issue. They demonstrate high rates of identity issue, full of feeling issue, useful psychosis, dejection and post-traumatic anxiety issue (PTSD), among other mental issues [9].

C. Managing mentally ill inmates in prisons

Various researchers have affirmed that a significant number of rationally sick people are housed all through our state and government jail frameworks. Albeit particular evaluations differ contingent upon the examination strategy and meaning of dysfunctional behavior

utilized, the extent of rationally sick prison inmates is by and large assessed to be around 16%, in view of psychological wellness benefit records. As far as particular sicknesses, jail prisoners have a tendency to have an indistinguishable issue from the all-inclusive community, yet with more prominent recurrence and force. As per the American Psychiatric Association (2004), the most well-known maladjustments in the detainee populace are despondency, schizophrenia, and bipolar issue, a finding that applies to jails in both the United States and the United Kingdom. Prisoners are likewise more as often as possible determined to have identity issue, a circumstance that is jumbled by introverted identity issue, which has as its essential analytic criteria solitary or criminal conduct, so it is a finding for which most inmates qualify. At long last, inmates will probably have co-happening substance mishandle clutter. For instance, one review found that around 45% of rationally sick prisons inmates" demonstrated co-morbidity of a noteworthy emotional instability and a substance manhandle scatter. Co-happening issue are harder to treat on the grounds that the diseases can connect with each other and in light of the fact that treatment procedures for the individual issue might be inconsistent with each other.

IV. Analysis on Prisoners

Method: For the research study we chose 300 prisoners and analyzed them for getting to the result of the paper.

We asked about the current status of prisoners, 13.3% had been remand or untried, 16.7% had been convicted but not yet sentenced, 33.3% of the prisoners had been sentences and 33.3 % of the license recall. Only 3.3% of the prisoners had been sentence to death on pre-intervention. While on post intervention, 18.7 % had been remand or untried, 25.3 % had been convicted but not yet sentenced, 28.0 % of the prisoners had been sentences and 24.0 % of the license recall. Only 4.0 % of the prisoners had been sentence to death.

Table 1:- Current status of Prisoners

Current Status					
		Pre		Post	
		Frequency	Percent	Frequency	Percent
Valid	Remand or untried	40	13.3	56	18.7
	Convicted but not yet sentenced	50	16.7	76	25.3
	Sentenced	100	33.3	84	28.0
	License Recall	100	33.3	72	24.0
	Sentenced Death	10	3.3	12	4.0
	Total	300	100.0	300	100.0

Table 2:- Use drugs (other than alcohol) before coming to prison

Use drugs before coming to prison					
		Pre		Post	
		Frequency	Percent	Frequency	Percent
Valid	Yes	180	60.0	140	46.7
	No	120	40.0	160	53.3
	Total	300	100.0	300	100.0

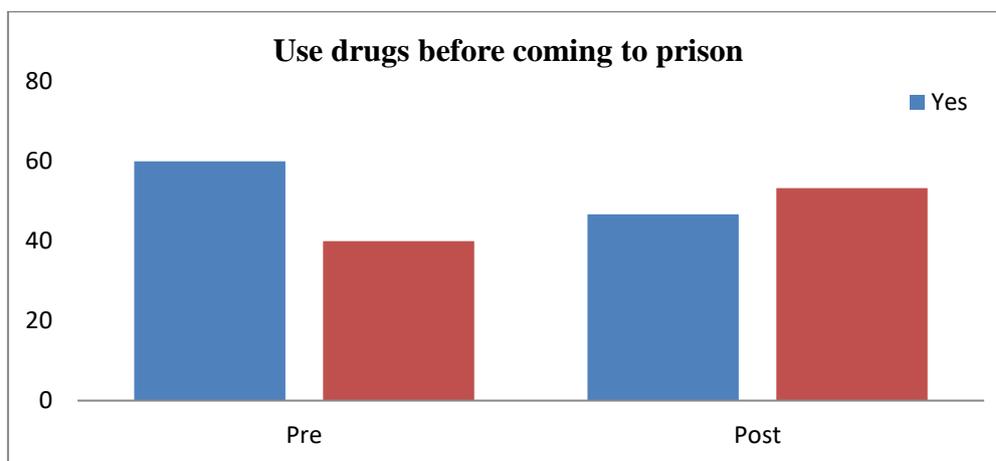


Figure 1:- Use drugs (other than alcohol) before coming to prison

Table 3:- Receiving help to detox by prisoner

		receive help to detox			
		Pre		Post	
		Frequency	Percent	Frequency	Percent
Valid	Yes	170	56.7	150	50.0
	No	80	26.7	100	33.3
	Not applicable	50	16.7	50	16.7
	Total	300	100.0	300	100.0

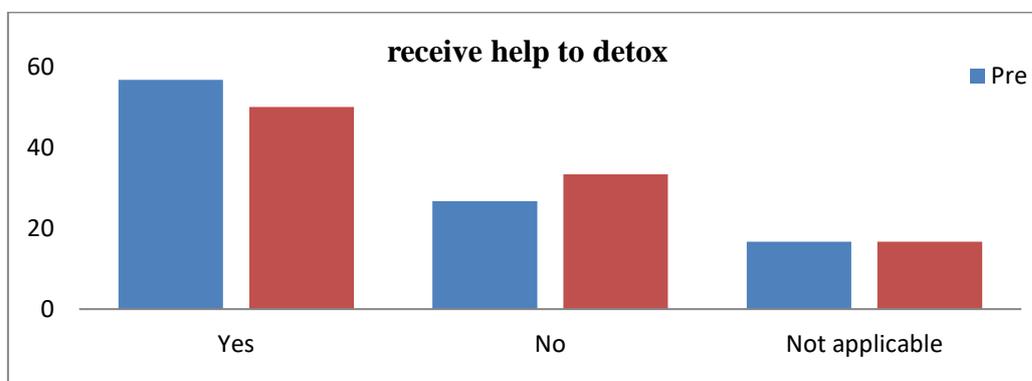


Figure 2:- receiving help to detox by prisoner

Table 4:- Integrated drug treatment system (IDTS) client by prisoners

		an Integrated Drug Treatment System (IDTS) client			
		Pre		Post	
		Frequency	Percent	Frequency	Percent
Valid	Yes	210	70.0	140	46.7
	No	90	30.0	160	53.3
	Total	300	100.0	300	100.0

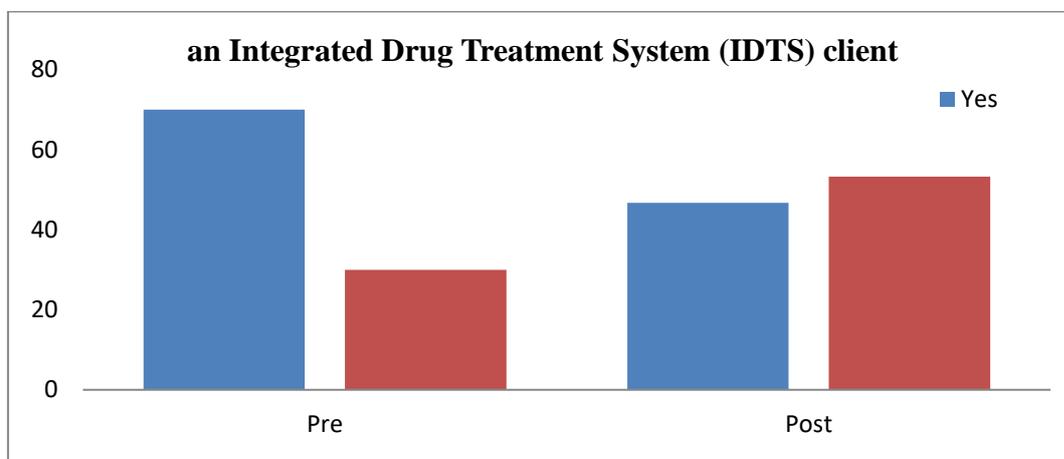


Figure 3:- Integrated drug treatment system (IDTS) client by prisoners

A. Done an accredited Offending Behaviour course (for example Thinking Skills Programme, Anger Management, or others) in the prison

From the table we concluded that out of 300 prisoners, 66.7 % of prisoners said yes, and 33.3 % of prisoner said No for doing an accredited offending behaviour course (for example thinking skills programme, anger Management, or others) in the prison on pre-intervention. While on post-intervention 60.7 % of prisoners said yes, and 39.3 % of prisoner said No for doing an accredited offending behaviour course (for example thinking skills programme, anger Management, or others) in the prison [10].

Table 5:- Accredited offending behavior course for prisoner.

an accredited offending behavior course					
		Pre		Post	
		Frequency	Percent	Frequency	Percent
Valid	Yes	200	66.7	182	60.7
	No	100	33.3	118	39.3
	Total	300	100.0	300	100.0

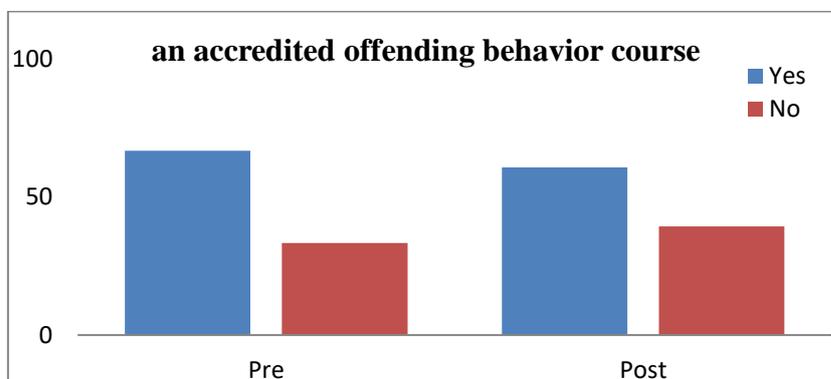


Figure4:- Accredited offending behavior course for prisoner

B. Comparison between Pre and Post psychotherapeutic intervention test using Paired T-Test

Comparison between Pre and Post psychotherapeutic intervention test performed using paired T-Test. Responses for questionnaire has been recode (Strongly Agree=5, Agree=4,Neutral=3,Disagree=2,Strongly Disagree=1) to calculate the means score of Pre and Post intervention test. Questionnaire is basically classified in two pieces to know the stress level of the jail inmates and variables are listed below in table 6.

Table 6 Classification of Variables in Positive and Negative Questions

Positive Questions)	(Negative Questions)
When I first came to prison I felt looked after	There is nowher in this prison I can get away from being observed, assesed and evaluated by staff
This is a well controlled prison	There is lot of threats/bullying in this prison
I am a higher security than I need to be	Decision are made in this prissonn about me, I can notunderstood
I have no difficulties with other prisoners here	You feel stressed in this prison
Relationship between staff and prisoners in this prison are good	Some of the treatment I receive in this prison is degrading
I received support from staff in this prison when I need it	You get stressed if do something wrong in this prison staff only use punishment if they have other first options.
Staff here treat prioners fairly when applying rules	My experience of imprisonment in this particular prison has been stressed.
Staff here treat prioners fairly when disturbing privilges	
Privilegs are given and taken fairly in this prison	
I am being looked after with humanity in here	
Security carry out their security task well in this prison	
Staff help prisoners to maintai contact with their families	
I trust the officers in this prison	
I am being helped to lead a law-abiding life on release in the community	
Personally, I get on well with the officers on my wing	
The best way to get things done in this prison is to be polite and go through official channels	
I have been heped significantly by a member of staff in this prison with particular health problem	
Overall , I am treated fairly well by staff in this prison	
I am treated as person of values in this prison	
I feel cared most of the time in this prison	
My need are being addressed in this prison	
The rules are regulation made in this prison are very clear to me	
I feel I can handle my emotions and stress in here	
Most Staff addresses and talk to me in respectful manner	
I am given adequate opportunity to keep myself clean and decent	
Staff in this prison "tell it like it is"	

Positive Question: Higher the responses (Strongly Disagree), high likely to be stressful.

Negative Question: Lower the responses (Strongly Agree), high likely to be stressful.

Reliability Test

Cronbach Alpha is a reliability test conducted within SPSS in order to measure the internal consistency i.e. reliability of the measuring instrument (Questionnaire). It is most commonly used when the questionnaire is developed using multiple Likert scale statements and therefore to determine if the scale is reliable or not.

C. Reliability Test of Pre and Post variables of Positive Questionnaires

The value for Cronbach alpha which in Pre and Post case are 0.853 and .804 and reflects high reliability of the measuring instrument, Furthermore, it indicates high level of internal consistency with respect to the specific sample.

Table 7:-Reliability Test of Pre and Post variables of Positive Questionnaires

Reliability Statistics			
Pre-Post	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Pre	0.853	0.856	33
Post	0.804	0.802	33

B. Reliability Test of Pre and Post variables of Negative Questionnaires

The value for Cronbach alpha which in Pre and Post case are 0.703 and .595 and reflects high reliability of the measuring instrument, Furthermore, it indicates high level of internal consistency with respect to the specific sample.

Table 8:- Reliability Test of Pre and Post variables of Negative Questionnaires

Reliability Statistics			
Pre-Post	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Pre	0.703	0.701	7
Post	0.595	0.609	7

V. Conclusion

An impartial onlooker of the fashionable psychotherapeutic scene will be made to confess that present day theories about the way individuals start to be psychologically sick are exceeded in quantity just by the readily available cures for helping them effectively once again. Prisoners in the India & elsewhere have usually confronted a distinctive range of pressures and contingencies to that they were expected to react and adapt to be able to endure the prison experience. Nevertheless, during the last a number of years starting during the early 1970s and continuing to the current time a mix of forces have converted the nation's criminal justice system and then altered the dynamics of imprisonment. The issues prisoners' today face to be able to both endure the prison experience and also, ultimately, reintegrate into the free world after introduction have transformed as well as intensified as being an outcome. In this work we may initially concentrate on the jail inmates. It has been found that out of 300 prisoners, on pre-intervention, 26.7% of prisoner had no problem with either drug or alcohol, 40.0% of prisoner said Yes only with drugs, 26.7% of prisoner said Yes, only with alcohol, 6.7% prisoner said Yes. It has been found that all the variables are classified in Positive and Negative, so two Pairs of T-test have been performed. It was found that Mean score of Positive Pre is higher than Positive post

which shows that before intervention test, stress level was high among the prisoners however post intervention it has been reduced significantly. For Pair 2, Negative Pre is lower that means for stress level was higher before intervention test and it has been significantly reduced posttest.

References

- [1]. Fazel S, Danesh J. Serious mental disorder in 23 000 prisoners: a systematic review of 62 surveys. *Lancet*. 2002; 359:545–50.
- [2]. Young S, Moss D, Sedgwick O, Fridman M, Hodgkins P. A meta-analysis of the prevalence of attention deficit hyperactivity disorder in incarcerated populations. *Psychol Med*. 2015;45:247–58.
- [3]. Usher AM, Stewart LA, Wilton G. Attention deficit hyperactivity disorder in a Canadian prison population. *Int J Law Psychiatry*. 2013; 36:311–5.
- [4]. Gaiffas A, Galera C, Mandon V, Bouvard MP. Attention-defecit/hyperactivity disorder in young French male prisoners. *J Forensic Sci*. 2014; 59:1016–19.
- [5]. Gunn J, Maden A, Swinton M. Treatment needs of prisoners with psychiatric disorders. *BMJ*. 1991; 303:338–41.
- [6]. Birmingham L, Mason D, Grubin D. Prevalence of mental disorder in remand prisoners: Consecutive case study. *BMJ*. 1996; 313:1521–4.
- [7]. Rivlin A, Hawton K, Marzano L, Fazel S. Psychiatric disorders in male prisoners who made near-lethal suicide attempts: case-control study. *Br J Psychiatry*. 2010; 197:313–9.
- [8]. Robinson L, Spencer MD, Thomson LDG, Stanfield AC, Owens DGC, Hall J, Johnstone EC. Evaluation of a screening instrument for autism spectrum disorders in prisoners. *PLoS One*. 2012; 7:e36078.
- [9]. Senior J, Birmingham L, Harty MA, Hassan L, Hayes AJ, Kendall K, King C, Lathlean J, Lowthian C, Mills A, Webb R, et al. Identification and management of prisoners with severe psychiatric illness by specialist mental health services. *Psychol Med*. 2013; 43:1511–20.
- [10]. Fazel S, Seewald K. Severe mental illness in 33 588 prisoners worldwide: systematic review and meta-regression analysis. *Br J Psychiatry*. 2012;200:364–73

Biocomposites: A Review On Effects Of Processing And Environment On Performance

Vandna*

Abstract

The biocomposites are gaining more attention among building construction materials, domestic sector, automotive and aerospace industry over the past period, in other sectors the developments have been still found limited. With the sustainable developments the potential still exist for biocomposites to enter new market sectors to increase demand. This paper makes an attempt to study the different types of natural fibers and their uses to develop biocomposites. A review is conducted on the possible areas of use of these composites and also focuses on effect of various processing parameters and environment variables on their performance. The various technologies used in processing of biocomposites have been discussed. After the above discussion it also describes the current status and future trends in bio-composite industry.

Keywords: Biocomposites; Natural fibre; Biomedical; Composite; Processing

1. Introduction

The term composite refers to the material that is composed up of reinforcement distributed in a continuous phase called matrix. The properties of composites are entirely different from their constituents from which they derived. The properties of the composites depend on the type of reinforcement and its bonding with the metal matrix. The composites can be categorized on the basis of physical or chemical nature of the matrix phase[1] like ceramic-based composites, metal matrix, carbon-matrix composites, polymer based composites and biocomposites. In this review study focus is made on the types and processing of synthetic Biocomposites. By definition, biocomposites is a composite material that can be used in biomedical devices intended to interact with biological host systems. Such composites are essentially a combination of two constituent phases, i.e., a reinforcing phase, such as fiber or particle, and a continuous phase called matrix. The developments in the field of biomaterials made from natural resources are increasing day by day. The greatest difficulty in working with natural fiber based plastic composites is their large variation in physical properties and characteristics. Biocomposites properties are influenced by many variables, including the type of fiber, environmental conditions and processing methods. There has been a remarkable interest on the industrial applications of composites composed up of biofibers reinforced with biopolymers. Biopolymers have seen a tremendous increase in use as a matrix for biofiber reinforced composites [2].

2. Classification of Biocomposites

Fig. 1 shows the classifications of natural fibers on the basis of forms of reinforcements in biocomposites. The figure reveals that there are typically three kinds of reinforcements, i.e., short fibers, long fibers, continuous fibers, and particulates. These fibers have been used in developing composites for biomedical applications, such as medical screws and

* Department of Applied Sciences, Malout Institute of Management & Information Technology (MIMIT), Malout, Distt. Mukatsar, Punjab, India

total hip replacement (THR) stems made from short-fiber reinforcements, orthopedic bone plates fabricated using unidirectional (UD) laminas or multidirectional tape laminates, powder reinforced dental composites [3] (Evans and Gregson, 1998). Table 1 shows the mechanical properties of some natural fibers used in manufacturing of biocomposites [4]. Some of the sources of natural fibre like Banana, Jute, Plam, Bamboo, Areca and Hemp are depicted in Fig. 2.

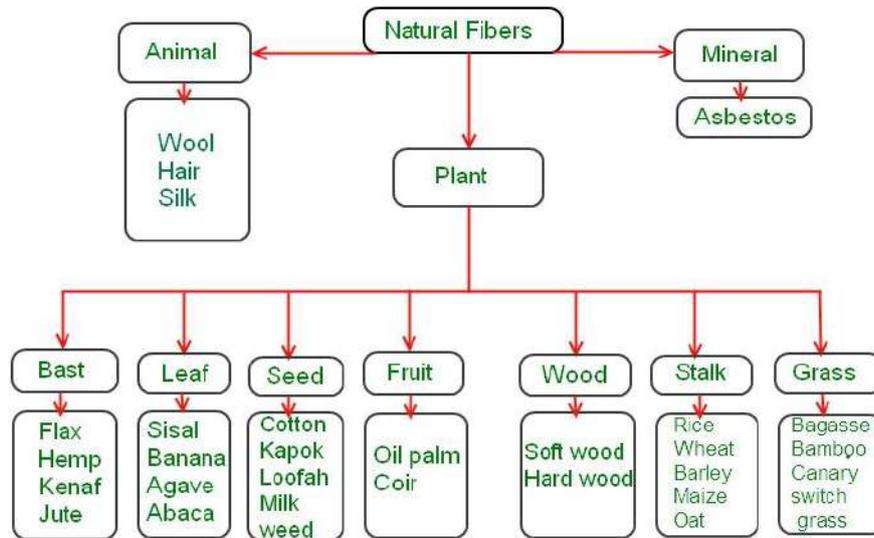


Figure.1 Classification of natural fibers used in biocomposites

Table 1. Mechanical properties of different types of natural fibers [4]

Natural fibers	Tensile strength (MPa)	Elongation at break (%)	Young's modulus (GPa)
Jute	200–800	1.16–8	10–55
Banana	529–914	3	27–32
Coir	106–175	14.21–49	4–6
Flax	300–150	1.3–10	24–80
Kenaf	295–119	3.5	2.86
Pineapple leaf	170–162	2.4	60–82
Sisal	80–840	2–25	9–38
Hemp	310–900	1.6–6	30–70
Ramie	348–938	1.2–8	44–128



Fig. 2 Sources of natural fibre

3. Applications of Biocomposites

- Biocomposites are gaining more interest among medical applications. This section discusses various modern applications of Biocomposites.
- Rice Husk reinforced polyethylene composites are fabricated by injection molding process. These composites can be used to manufacture window frames with less manufacturing cost.
- Flax fiber based composites are used in fabrication of cellular beams and panels for load bearing applications.
- Coir based reinforced Biocomposites have appreciable durability due to their resistance toward acid and sulphate environment. These are used in light weight loading structures and components.
- Natural fibres composites are gaining more interest in structural and infrastructural applications where normal strength and environment friendly properties are required at minimum cost.
- Medical applications: Bone fracture repair, there are many joint excessive loading conditions under which failure occurs due to excessive tension and shear. These fractures can be repaired internally and externally. Biocomposites made components such as splints, braces, wires or pins that are used to hold bones under high tension by screws. Traditionally used materials are heavier and could not be casted effectively and may cause discomfort to the patients [5].
- Joint replacements: The most commonly used artificial joint are total hip replacement and total knee replacement. Total hip replacement is the most versatile artificial joint implanted in human body. These joints can be designed by changing the appropriate materials and geometry of fixing of cups.

4. Processing Routes of Biocomposites

The selection of processing technique for biocomposites depends upon materials being used and the desired properties of the final product. The various techniques involved in biocomposites manufacturing are conventional extrusion and injection, solvent casting,

compression; autoclaving, infusion and additive manufacturing based sintering techniques like sintering and 3D plotting. Some other techniques that can also be used for manufacturing are lyophilisation, UV polymerization and gas foaming. Extrusion and injection can be applied to thermoplastic materials as base matrix. Filament winding technique is used to create hollow composite structures such as pressure vessels and pipes. Compression method is conventional method by which moulding material is required to be first preheated. This technique is used to develop large flat and curved surfaces. After the preheat material is subjected to compression under high pressure and temperature. This procedure involves less fiber length degradation as compared to injection molding [6]. In infusion method vacuum pressure is used to infuse resin into laminated fiber reinforcement. In autoclaving thermoset or thermoplastic matrix based composites are processed. This process is generally used only when isostatic pressure is applied to the workpiece of complex shape. Electrospinning is solution based technology used for production of thin filaments. This technique used electrical charge to fabricate very fine fibres at micro or nano scale. This process does not require any high temperature to produce threads from solution which makes it suitable to develop fibres from large molecules as biocomposites [6-7].

Table. 2 Types of biocomposites processing techniques

Processing technique	Materials	Applications
Extrusion	Polymers, PLA/30% Flax	Polymer wires for filament winding
Injection moulding	Ploy-(Lactic acid), Starch/30%Jute	Biomedical components like screws for plates, packaging & disposal parts
Filament winding	Thermoplastic fibre filaments	Hollow composite structures, pipes, pressure vessels, yacht masts.
Compression	Unidirectional tapes, woven fabrics, fibre mats	Flat and moderately curved parts
Resin transfer moulding (RTM) & Sheet moulding compound (SMC)	Liquid resins into fibrous reinforcements	Structural composites with polymer matrix
Infusion	Laminated fibre and resins	Laminated composite sheets, Electronic packaging
Autoclaving	Thermoplastic resins	Smaller flat parts
Solution based techniques		
Solvent casting	Polymers solutions	Compound biocomposites structures, solvent cast steels
Phase separation	Polymers solutions, polymer-ceramic compound	Porous parts, Biomedical applications
Electrospinning	Biodegradable polymers, Ultra fine electrospunfibre	Fibre thin filaments, artificial organ components, scaffolds
AM Technologies		
Rapid prototyping	Thermoplastic materials, metal alloys, ceramics	Production of 3D structures

5. Processing Parameters

The main parameters that are responsible for the production of biocomposites are:

- 1) Level of overall porosity
- 2) Selection of type of resin or fibre
- 3) Selection of fibre size

- 4) Processing temperature during the process
- 5) Distribution of particulate or reinforcement
- 6) Operating pressure in compression
- 7) Proportion of reinforcement in the matrix
- 8) Processing time

Before starting the fabrication of biocomposites all the above parameters need to be finalized as per the required area of application.

6. Factors Affecting Performance of Biocomposites

The performance of biocomposites during operations depends on properties which in turn related to fibre architect and fibre-matrix interface. Fibre architect deals with fibre geometry, fibre interface, packaging arrangement and fibre volume fraction control mechanical properties of the composite. Fibre geometry is controlled by the method by which fibre can be extracted and processed [8]. It is advisable to retain as much as fibre length as possible because higher surface contact leads to greater reinforcing efficiency. Fibre alignment can be made by aligning the fibre within the base matrix which improves packaging arrangement and performance.

Fibre-matrix interface is also the main parameter for composite performance. Better interface between fibre and matrix improves the performance. The interface helps to transfer applied load to the reinforcement within the base matrix by shear stresses. Appreciable bonding is required at the interface to transfer adequate load to the reinforcement. Many reinforcements that are having incompatibility with polymer matrix require methods to improve bonding strength between them. The surface treatment of reinforcement fibre or introducing compatible agents prior to composite manufacturing improves bonding strength of the composite.

The appropriate knowledge of equipment and material characteristics is required to process the biocomposites. The processing conditions are influenced by the process control parameters. Most of the conventional biopolymers undergo decrease in viscosity during extrusion due to shear thinning. On the other hand shrinkage of biopolymers is low which affect the accuracy and process stability of the biomaterials. In order to achieve these precise machining conditions computer controlled driven systems are used. These polymers are processed at comparatively low temperatures and pressure variations. The small variation in temperature will influence the sintering and plasticizing parameters [9]. Some of the researchers have studied the effect of extrusion and injection speed on the weight change of final product.

7. Future Scope of Biocomposites

The main markets for biocomposites are automotive and construction sector. The improvements in the processing techniques and developments in advance materials have explore new areas for the biocomposites like medical instruments and human implants. More efforts are being made by the researchers to develop biodegradable resins with better mechanical properties [10-13]. There is also need to explore the materials like bioresins and bioplastics for the replacement of synthetic based adhesives. There is also need to develop the options to reuse the waste products released from the textile and paper industries to create environment friendly products [14].

8. Summary

The various technologies used for the processing of biocomposites have been discussed in this study to explore possible options for design of new materials. The effects of

processing parameters and environment are discussed for variety of biomaterials. The various type of natural fibres can be used for the production of biocomposites that can be the substitute to depleting resources in future. Cellulosic fibers are gaining more interest in bio-based materials due to their improved mechanical properties, low density, environmental benefits, renewability, and economic feasibility. Currently, natural-fiber based polymer composites have received much attention for different industrial and structural applications because of their low density and biodegradability.

9. References

1. Surappa M., "Aluminium matrix composites: Challenges and opportunities," *Sadhana*, vol. 28, pp. 319-334, 2003.
2. Faruk, O., and Bledzka, A.K., et al., "Biocomposites reinforced with natural fibers: 2000–2010," *Progress in polymer science*, vol.37, pp. 1552-1596, 2012.
3. Evans, S.L., Gregson, P.J., "Composite technology in load-bearing orthopaedic implants," *Biomaterials*, vol. 19, pp. 1329–1342, 1998.
4. Cheung, H-Y, Ho, M-P, Lau, K-T, Cardona, F., Hui, D., "Natural fibre-reinforced composites for bioengineering and environmental engineering applications" *Composites Part B.*, vol. 40, pp. 655–663, 2009.
5. Ramakrishna, S., Huang Z. M. (2016), "Biocomposites", pp. 1-82.
6. Cardon, L.K., Ragaert, K.J., De Santis, R. and Gloria, A., "Design and fabrication methods for biocomposites," *Biomedical Composites*, pp. 17-36, 2017.
7. Koster, R. and Cardon, L., et al. "The Bio-Molding Test Program- A collaborative activity of Industry and University," *3rd Polymer & Moulds Innovation Conference*, Ghent, Belgium.
8. Van Rijswijk, K., and Teuwen, J.J.E, et al. "Textile fiber-reinforced anionic polyamide-6 composites. Part I: The vacuum infusion process," *Composite Part A: Applied Science & manufacturing*, vol. 40 (1), pp. 1-10, 2009.
9. Adekomaya, O., Jamiru T., Sadiku R., Huan Z., "A review on the sustainability of natural fiber in matrix reinforcement—A practical perspective," *Journal of Reinforced Plastics and Composites*, vol. 35(1), pp. 3-7, 2016.
10. Fowler, P.A., Hughes, J.M. and Elias, R.M., "Biocomposites: technology, environmental credentials and market forces," *Journal of the Science of Food and Agriculture*, vol. 86, pp. 1781–1789, 2006.
11. Ariadurai, S. A., "Bio-Composites: Current Status and Future Trends," 5th International Technical Textiles Conference – November 2012. Pp. 1-16.
12. Lau, K. T., Ho, M. P., Yeung, C. A., and Cheung, H. Y., "Bio-composites: Their multifunctionality", *International Journal of Smart and Nano Materials*, vol.1 (1), pp. 13-27, 2010.
13. Fu Z., Suo, B., Yun, R., Lu, Y., Wang, H., Qi S., Jiang, S., Lu, Y., Matejka, V., "Development of eco-friendly brake friction composites," *Journal of Reinforced Plastic Composites*. vol. 31, pp. 681–689, 2012.
14. Mishra, S. C., "Low Cost Polymer Composites with Rural Resources," *Journal of Reinforced Plastic Composites*, vol. 28, pp. 2183–2188, 2009.

Adoption and Compliance of International Financial Reporting Standard (IFRS): A Case of Selected Economies

Neha Bajaj*

Dr. Harjit Singh**

Purpose

The purpose of this paper is to examine whether the selection of IFRS by various nations is the need of an hour, in this way it is essential to comprehend the impact of IFRS on the money related explanations and its helpfulness. This exploratory paper will accentuate on the appropriation of IFRS in different nations notwithstanding its advantages to them.

Design/methodology/approach

– Using secondary and case study research methods, the information for selected countries were studied.

Findings

– The reports furnished by the countries contained both information and propaganda. The ideology of the standards ensured compliance, which can showcase the true and fair view picture of the transactions taking place in the financial year.

Practical implications

– IFRS adoption around the world will bring the uniformity, understandability, relevancy and measurability in the preparation of the financial reports by different countries in different countries.

Originality/value

– The paper contributes to the adoption and compliance of IFRS which will forecast the information in a way to harmonize the uniformity in the recording of the financial transactions and bring up the comparability which will be more effective while the accounting principles are basic rules that are applied in recording transactions and preparing financial statements.

Keywords: IFRS, IASB and different nations.

Abstract

In the period of globalization, it has turned out to be critical for every one of the nations to grasp International Financial Reporting Standards (IFRS). The present situation of the international business settlement can't remain to shield itself from the advancements and varieties happening around the universal exchange. IFRS can be cleared up in a restricted and moreover an extensive acumen. In the solemn sense, IFRS is the new expansion to the association of certifications that issued by the International Accounting Standards Board (IASB). In the wide brains IFRS joins measures and understandings embraced by the IASB, IASC and SIC. It focusses significantly on viewpoints like comprehend capacity, similarity, irritability and opportuneness in the planning of the money related revealing. The developers in the arrangement of accounting benchmarks are more models based when appeared differently in relation to the rules issued before that were basically control based. The change of GAAP to IFRS will transport a huge contrast into the investigation of the

* Research Scholar, Amity College of Commerce and Finance, Amity University Uttar Pradesh, India

**Associate Professor, Amity School of Business, Amity University Uttar Pradesh, India

use proportions for the associations. The selection of IFRS by various nations is the need of an hour, in this way it is essential to comprehend the impact of IFRS on the money related explanations and its helpfulness. This exploratory paper will accentuate on the appropriation of IFRS in different nations notwithstanding its advantages to them.

Introduction

For the fiscal change remote direct hypothesis are required, to empower the wander climate, it needs to facilitate its cash related revealing with rest of the economies of the globe so theorists from outside will understand the budgetary outcomes and cash related places of the associations. The necessities to pass on finished the peripheries have extended with the advancement in universal trade, which furthermore can help the globalization of capital markets.

Numerous organizations in a single country are achieved in the capital business area of another country. Alongside these, there are cash related articulations conveyed in one country which has been used as a piece of another country more as frequently as could be expected under the circumstances. IFRS appropriation will pass on the subjective qualities of the monetary revealing which will bestow valuable data to the clients. The outcome has raised the issue of synchronization of accounting systems, exhibit, exposure, et cetera. To achieve finish synchronization, it may not be possible in perspective of qualification in the microeconomic components, macroeconomic elements, political, legitimate and group condition in countries. However the many eccentrics can be wiped out by regulation of accounting hones, which will realize issuance of accounting benchmarks.

The Accounting Standards not only develop more significant straightforwardness but helps in smooth functioning of the business. Accounting Standards in like manner helps the regulatory associations in benchmarking the accounting precision. Accounting standards are developed at national and worldwide levels.

There are two strategies of bookkeeping models that are perceived for overall utilize particularly, the U.S Generally Accepted Accounting Principles (GAAP) and the International Financial Reporting Standards (IFRS) issued by the London-based International Accounting Standards Board (IASB). For the most part, perceived bookkeeping measures (GAAP) are diverse in nature, yet considering a few fundamental models as maintained by all GAAP rules. These measures merge consistency, significance, immovability and similarity. GAAP guarantees that all affiliations are on a smooth playing field and that the data they contemporaneous are obvious, correlated, strong and equal.

IFRS can be elucidated in a restricted and moreover a sweeping way. In this way IFRS is the imaginative main course of action of certifications that IASB has apportioned. IFRS consolidates checks and understandings supported by the IASB, IASC and SIC. The new game plan of accounting benchmarks is more gauges based when stood out from the before rules that were required to be essentially governed based. The selection of IFRS will outfit budgetary reports in a way which will make the money related exposure more pertinent. IFRS brings the reasonable esteem estimation wherein the value that would be gotten at the season of pitching a benefit or paid to exchange an obligation is considered on showcase construct estimation and not in light of substance – particular estimation. The accounting benchmarks square settled an IFRS group with the motive to examine the following in India:

1) Philosophy for accomplishing joining with IFRS.

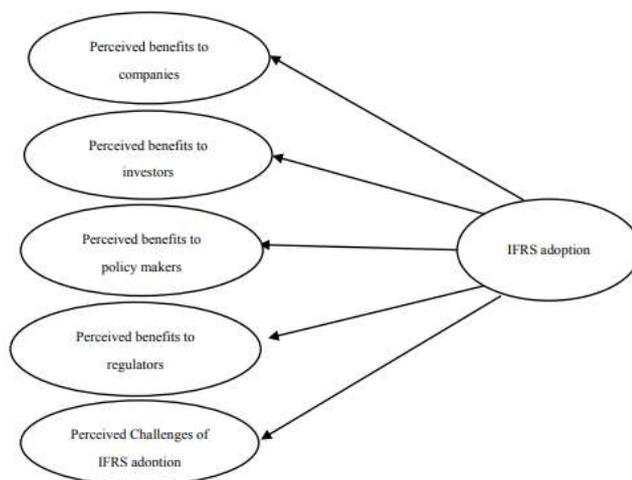
2) Arranging down a guide for accomplishing merging with IFRS with a perspective to make an India IFRS protest.

IFRS consolidated Indian Accounting Standards (Ind AS) showed up in the long stretch The execution stayed adjourned till April 2012 as a result of the sober minded challenges went up against by Indian Controllers and also corporate. The autonomy of the fluctuating suppositions converging of IFRS with close-by measures remains by and by a get-together of examination and also a reality.

The effect of receiving IFRS has examined on profit organization which has been talked about taking an example of Chinese firms. Before the reception of IFRS, the Chinese measures were control based as in correlation with the standard based IFRS. The post-reception impacts made less smooth profit, steady with a diminishment in income administration. The paper focuses on that there is no improvement in the stability of misfortune acknowledgment (Zhou et al.).

The author learned about South Africa as a critical nation inside the landmass of Africa for the reception of IFRS. The paper focused on the impacts of IFRS appropriation on bookkeeping. In this exploratory paper, the fundamental concentrate lies on bookkeeping quality as profit quality and esteem significance, and guesses that both will build post IFRS appropriation. The paper focused on that the profit quality isn't suggestively enhanced post selection. What's more, the esteem significance of the real asset report parts changes post appropriation (Ames.D (2013).

The experiences of Vietnamese bookkeeping masters and academician in regards to the ideal approach and timeliness reception of IFRS in Vietnam. The data has been researched from 3,000 polls which was sent to Vietnamese examiners, bookkeepers, & bookkeeping scholastics crosswise over Vietnam in 2012. An aggregate of 728 usable reactions were gotten delivering a successful reaction rate of 24 for every penny. The dominance of the respondents considered that IFRS reception ought to be allowed for expected appropriation of IFRS as opposed to required selection. Along these lines, the outcomes showed that the surprised union method is finer than the enormous detonation method of IFRS reception (Ames.D 2013)



Source:

<http://www.sciedupress.com/journal/index.php/ijfr/article/download/12695/7839> retrieved on 4th Dec 2018.

The appropriation of IFRS has investigated the recursively in IAS -setting, concentrating on the interest of entertainers from African nations. Worldwide Financial Reporting Standards (IFRS) Foundation guarantees as a worldwide standard-setter on a mix of aptitude and a legally translucent arrangement of recursive systems for the counsel of partners, experimental outcomes demonstrate that support in the last is geologically exceptionally uneven. The paper contends that theoretical befuddle between the standard-setter's goals from one viewpoint and the socio-economic, social and political conditions in numerous African nations on alternate prompts specific recursively that is risky for the previous' authenticity and viability. These discoveries are of more extensive importance for banter on worldwide standard-setting and advancement (Zori. et al)

India is one of the creating money related perspectives on the planet. For the fiscal progression remote direct theory (FDI) is required, to empower the wander environment, it needs to arrange its cash related, revealing with the rest of the economies of the globe so examiners from outside will appreciate the budgetary outcomes and money related places of the associations. The necessities to pass on finished the edges have extended with the development in overall trade, along these lines there is a globalization of capital markets. Association in one country is getting in the capital business fragment of another country. Subsequently, budgetary declarations, delivered in one country are used as a piece of another country more as frequently as could be expected under the circumstances; this has raised the issue of synchronization of accounting approaches, introduction and presentation of the financial transactions.

To achieve finish harmonization, may not be conceivable because of complexity in the budgetary, political, legitimate and social condition in countries. However the much variation from the norm can be discarded by systematization of accounting rehearses, which will achieve issuance of accounting benchmarks. The Accounting Standards not simply underwrite appropriate accounting treatment of complex business trades moreover energize more noticeable straightforwardness and business segment train. Accounting Standards moreover helps the regulatory associations in benchmarking the accounting precision. Accounting models are being set up both at national and worldwide levels.

Effect of IFRS on money related framework

Impact of IFRS on money related framework has been led on different examinations in many locales of the world analyzed the effect of IFRS on corporates. It has been inspected that the determination of IFRS has decidedly influenced substances; cash related detailing and broader financial settings. Daske et al. (2008) and Li (2010) analyzed the effect of IFRS task on overall capital markets.

In any case, Li (2010) researched the impact of IFRS on the cost of noteworthy worth in the European Union and found that required adopters of IFRS fathomed the essential diminishments in the cost of capital in the seasons of compulsory decision, yet just in nations with solid honest to goodness execution. Particular examinations have explored the impacts of IFRS allocation on bookkeeping quality. Goodwin and Ahmed (2006) concentrated on the effect of IFRS in Australia in relationship with the measure of parts. Then again, greater firms had various adjustments, immaterial extensions to net wage, and furthermore a lessening in esteem. Goodwin et.al (2007) inspected, that on a typical, IFRS expedited developments in liabilities and impact extent and abatement.

The paper shows that the requirements and the idea of the social and financial frameworks of created nations that are behind the definition of the IFRSs are essentially not quite the

same as those in Fiji. Since IFRSs is verifiably planned principally to suit the necessities of created nations, the pertinence of IFRSs to rising economies is in genuine uncertainty. The setting for the advancement of bookkeeping in a rising economy, for example, Fiji is not quite the same as that in created nations. To supplement the advancement of such a bookkeeping practice the paper recognizes the issues and suggestions that are related with holes or shortcomings in bookkeeping and reviewing game plans in rising economies (Parmod.Chand&M.White 2007)

To contrast the expenses with monetary proclamation gets ready of checking the progress to IFRSs in respect to its advantages for money related articulation clients from accepting "higher quality" IFRS-based data estimated as incremental esteem significance for recorded organizations in the UK, Hong Kong and Singapore. These nations had diverse ways to deal with harmonization paving the way to IFRS appropriation. The investigation depended on auxiliary information from money related explanations and offer market databases for an example of 150 haphazardly chose recorded organizations in three nations for the time of first-time selection of IFRSs. The outcome demonstrate that the degree and cost of changes in accordance with budgetary proclamations of UK organizations at first-time selection of IFRSs is more noteworthy than organizations in Hong Kong and, thusly, Singapore. Be that as it may, in every one of the three nations, monetary articulations arranged under IFRSs produce irrelevant advantages to clients as far as giving incrementally more esteem pertinent data than money related explanations arranged under nearby by and large acknowledged announcing hones. The self-grow then-fit system of the UK's Accounting Standards Board made organizations bring about higher expenses to-benefits on gathering of IFRSs than the particular acquiring of International Accounting Standards philosophy in Hong Kong and Singapore (Dennis .W 2009).

Worldwide companies with antagonistic competitors may wish to accelerate as quickly as regulations allow. On the contrary, the domestic companies with conservative policies may be gratified with a laid-back pace, bypassing any optional adoption dates to wait for an obligatory deadline (Nick et al.2009)

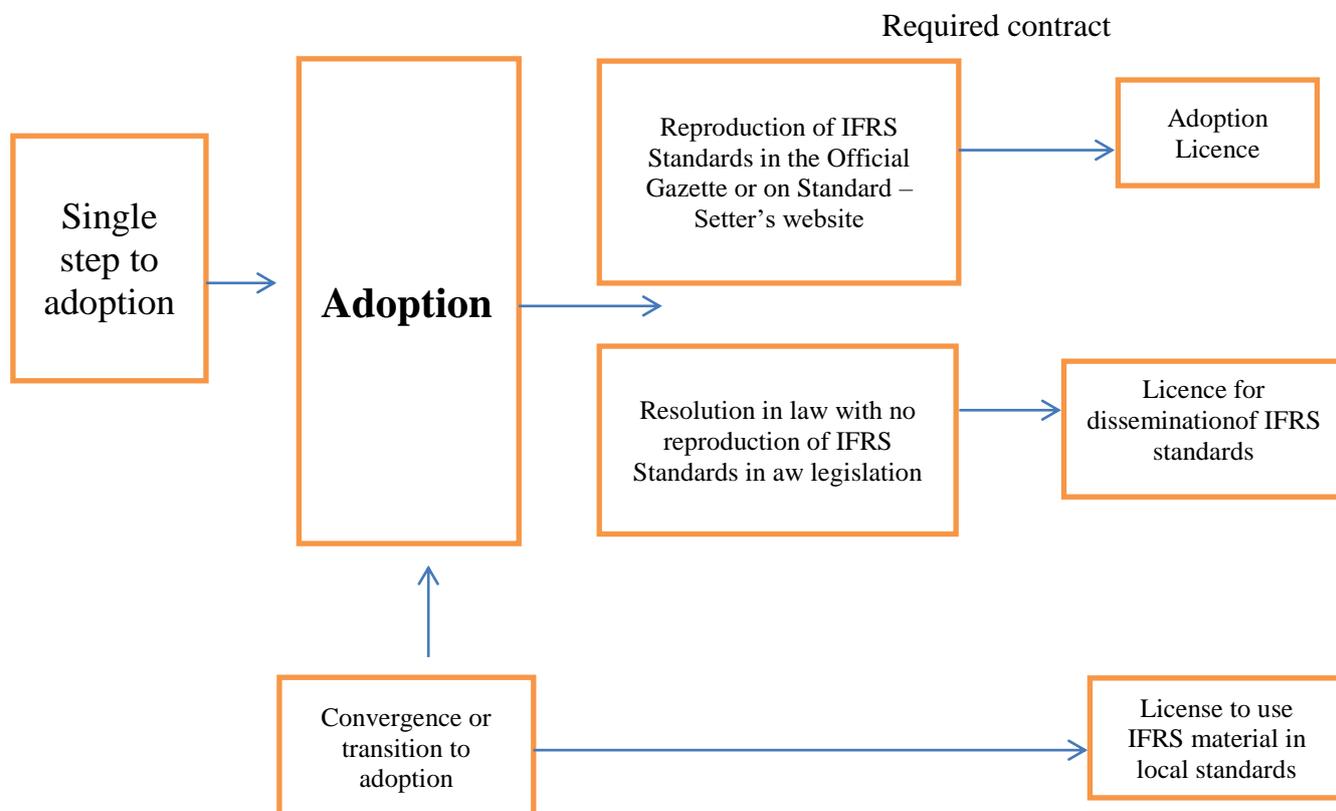
Adoption & Compliance of IFRS in Various Economies

International Financial Reporting Standards are utilized in the numerous parts of the world, which includes the European Union, India, Hong Kong, Australia, Malaysia, Pakistan, and Gulf Cooperation Council countries, Russia, Chile, Philippines, South Africa, Singapore and Turkey and so forth. "IFRS by country" generation for a separated illumination of the level of IFRS gathering per nation. IFRS assignment is very useful worldwide for go getters & diverse controllers of budgetary clarifications.

Organizations are keen to anticipate their profitability to the theorists who are anxious to give financial support. Organizations that have irregular procedures of universal happenings are among who are being profited with the IFRS.

Methods of Adoption

How will IFRS Standards be expressed in legislation?



Source:- <https://www.ifrs.org/use-around-the-world/adoption-and-copyright/retrieved> on 25th November 2018

Companies incorporated into remote activities and contributing preferred standpoint from the change due to the extended similarity of a set accounting standard. Notwithstanding, Ray J. Ball (2016) inspected some doubt of the general cost of the overall standard; He has centered in his investigation about the sensible features of IFRS and the effect of accountants from non-consistent law locale, where calamities have been asserted in a less advantageous way. IFRS Foundation has been built up which accentuation on the use of IFRSs in singular domains.

The information is taken from various sources. The first level was the responses given by those who were the standard setters and other critical bodies to an examination that the IFRS Foundation

Barth et.al (2008) investigated a development in accounting excellence coming to fruition which is a result of the determination of IFRS in 21 nations that effectively used private GAAP. They derived the elements that are related to money clarifications under IFRS are exhibited to less pay organization, all the more promising affirmation of hardships, and more regard congruity of accounting aggregates than those components using simply private GAAP. They likewise thought about that bookkeeping data is higher for firms that apply IFRS than for those that don't. Extra data about the effect of IFRS portion on money related verbalizations starts from thinks about that extended the examination to typical monetary degrees (Stent et al. (2010).They observed that apportionment of IFRS in New Zealand incited a gigantic augmentation in liabilities and reduction in esteem for private division components. Acclimations to wage charges, laborer points of interest and cash

related instruments were the rule purposes behind developments in liabilities and decreases in esteem.

The mixed money related declarations according to GAAP are separated and the merged money related elucidations under IFRS. Some picked degrees have been broke down to show the complexities between two courses of action of articulations. The figures to be recorded in Balance Sheet and the Profit and Loss statement have been totally drawn from the yearly report of the affiliation.

IFRS is used in piece of various parts of the world such as the European Union, India, Hong Kong, Australia, Malaysia, Pakistan, Gulf Cooperation Council countries, Russia, Chile, Philippines, South Africa, Singapore and Turkey, yet not in the United States. If it's all the same to you imply PricewaterhouseCoopers' "IFRS by country" generation for a separated illumination of the level of IFRS gathering per nation.

IFRS apportionment worldwide will be useful to theorists and diverse customers of budgetary clarifications, by reducing the costs of taking a gander at alternative avenues and growing the idea of evidences. Firms are moreover foreseen that would advantage, as examiners will be all the more anxious to give financing. Organizations that have irregular measures of worldwide activities are among the social event that would benefit by an alteration to IFRS.

Associations that are incorporated into remote activities and contributing favorable position from the change due to the extended resemblance of a set accounting standard. Be that as it may, Ray J. Ball (2016) has imparted some doubt of the general cost of the overall standard; he battles that the usage of the measures could be imprudent, and the commonplace complexities in accounting could get the opportunity to be obscured behind a name. He similarly conveyed stresses over the sensible quality emphasis of IFRS and the effect of clerks from non-consistent law areas, where adversities have been seen in a less helpful way.

To monitor progress towards the objective of solitary set general bookkeeping rules, the IFRS Foundation has made and posted profiles about the utilization of IFRSs in particular spaces. These depended upon data from different sources. The beginning stage was the reactions gave by standard-setting and other enormous bodies to an examination that the IFRS Foundation drove. Beginning at now, profiles are improved the situation 124 areas, including a large portion of the G20 spaces despite 104 others. As time goes on, the strategy is to have a profile for each ward that has gotten IFRSs, or is on a wander toward division of IFRSs.

Australia

The Australian Accounting Standards Board (AASB) has issued 'Australian reciprocals to IFRS' (An IFRS), numbering IFRS measures as AASB 1– 8 and IAS standards as AASB 101– 141. Australian partners to Standard Interpretation Committee and IFRIC Interpretations have moreover been issued, close by different "private" rules and interpretations. These cases supplanted past Australian sound bookkeeping measures with affect from annually detailing periods beginning on or after 1 January 2005 (i.e. 30 June 2006 was the essential report orchestrated under IFRS-relative benchmarks for June year closes). To this end, Australia, nearby Europe and two or three unique countries, was one of the hidden adopters of IFRS for private purposes (in the made world). It must be perceived, regardless, that IFRS and basically IAS have been a basic piece of accounting standard package in the making scene for quite a while following the relevant accounting

bodies were more open to allocation of overall benchmarks for a few explanations including that of capacity.

The AASB has made certain updates to the IASB presentations in making An IFRS, however these generally have the effect of murdering an option under IFRS, exhibiting additional exposures or executing necessities for not-income driven components, instead of leaving from IFRS for Australian substances. In like way, income driven substances that prepare cash related clarifications, according to An IFRS can advance an open articulation of consistent with IFRS.

Brazil

This country has authoritatively gotten IFRS for all associations whose securities are exchanged in an open market and for most cash related establishments whose securities are not exchanged in an open market, for both joined together and isolated (singular) association money related articulations. In Brazil, financial statements are prepared as per IFRS, which has been utilized for making inside decisions, especially by micro enterprises and by small sized companies

Canada

In Canada, IFRS transformed into a need for the Canadian transparently dependable advantage masterminded tries to cash related periods beginning on or after 1 January 2011. This consolidates open associations and other "advantage organized endeavors that are careful to far reaching or contrasting social events of investors. IFRS reception has made advantages in the Canadian capital markets as it has improved the esteem critics of profit made in the capital market (Cormier, 2013). In this paper, the creators has underscored on IFRS based income are more important than the Canadian GAAP income. IFRS Standards were adopted for financial years beginning on or after 1 January 2011 for most of the widely accountable enterprises. In the year 2015, Canadian GAAP for all publicly accountable enterprises provides a possibility for those filing in the United States and for regulated companies to apply US GAAP, rather than Canadian GAAP.

European Union

In 2002 the European Union concurred that from 1 January 2005 International Accounting Standards/International Financial Reporting Standards would apply for the solidified records of the EU recorded associations.

With a specific genuine goal to be declared for use in the EU, benchmarks must be gotten a handle on by the Accounting Regulatory Committee (ARC), which joins specialists of part state governments and is instructed by a social affair seeing bookkeeping specialists known as the European Financial Reporting Advisory Group. Thusly, IFRS as related in the EU may separate from that utilized somewhere else.

Parts of the standard IAS 39: Financial Instruments: Recognition and Measurement were not at first declared by the ARC. IAS 39 was thusly changed, emptying the differentiating alternative to record money related liabilities at sensible quality, and the ARC grasped the refreshed diversities.

Ghana

On January 1, 2007, Ghana changed its Ghana Accounting Standards (GAS) to grasp the IFRS. Its regulatory order has been constrained on the Bank of Ghana to design cash related explanations according to IFRS; thusly making it required for each and every open elements in the nation.

All organizations in Ghana are allowable to plan and present their money related explanations as per IFRS. Banks, Insurance organizations, and all organizations in the capital market managed by the GSEC (Ghanaian Securities Exchange Commission) are required to set up their monetary articulations as per IFRS.

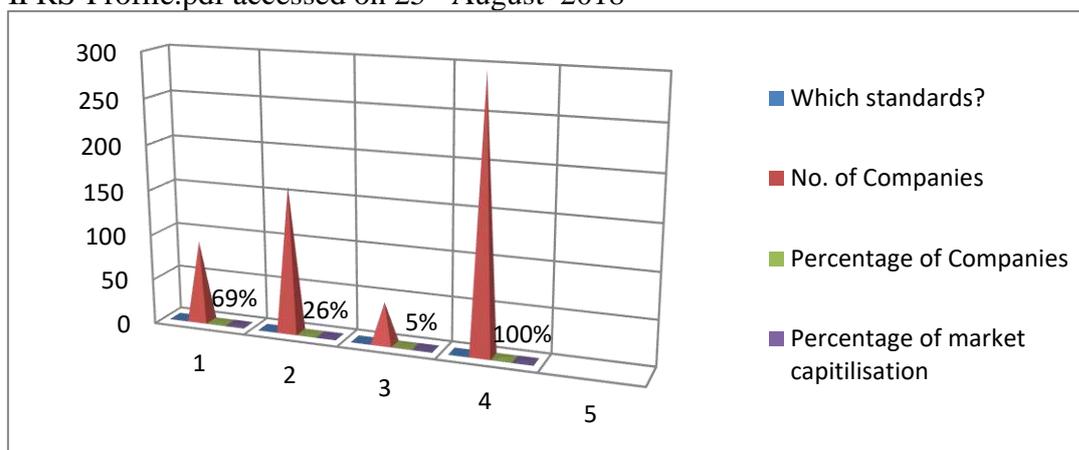
From the confirmation accumulated by this investigation, we reason that the exposure quality level of yearly reports and records of recorded firms in Ghana following the appropriation of IFRS/IAS supposedly is high and enhanced, thinking about the detailing characteristics of importance, understandability, similarity, and reliable portrayal. Likewise, we presume that there is a positive connection between the degrees of divulgence quality level of revelation of IAS 12 following the appropriation of IFRS/IAS with corporate wage charges. Thus, the investigation prescribes that recorded substances should endeavor to keep up higher detailing exposure quality (especially divulgence of IAS 12) of their yearly reports and records in order to make it simple and workable for the duty expert to survey their corporate salary charges fittingly and adequately. This investigation adds to the writing on corporate monetary revealing and exposure quality level practices and its association with corporate wage charges. The Ghana Stock Exchange is one of the fundamental venture showcases in Africa, south of the Sahara, in which IFRSs/IASs are required. In this manner an examination on the divulgence quality level of monetary report (especially IAS 12) exposure is noteworthy. It additionally adds to the writing on whether the organization divulgence quality level relates with its corporate livelihoods charges troubles or something else (Abedana et. al 2016)

China

In China no recorded organizations are required to utilize Chinese Accounting Standards ("CAS") which have substantively met with IFRS. Notwithstanding, it isn't an immediate interpretation of IFRS. The standards of IFRS are re-built into an organization that is anything but difficult to - comprehend by the clients of that data. The effect of item showcase rivalry (PMC) from existing adversaries and potential market contestants on income quality (EQ) in China was talked about (Majeed et .al 2016) intended to inspect the effect of item advertise rivalry (PMC) from existing opponents and potential market participants on profit quality (EQ) in China. The investigation planned has analyzed the effect of PMC on EQ and it utilizes methods for rivalry from existing and potential opponents. The investigation inspected the firms in China for the time of 2000-2014 and furthermore broke down the effect of International Financial Reporting Standards (IFRS) appropriation and state possession on the connection amongst PMC and EQ. The outcome has a positive connection amongst PMC and EQ. The investigation composed has analyzed the effect of PMC on EQ and it utilizes strategies for rivalry from existing and potential opponents. The investigation inspected Chinese firms for the time of 2000-2014 and furthermore dissected the effect of International Financial Reporting Standards (IFRS) reception and state proprietorship on the connection amongst PMC and EQ. The outcomes found a positive connection amongst PMC and EQ. The monetary detailing structures utilized by those organizations in Hong Kong are as per the following:

Which standards?	No. of Companies	Percentage of Companies	Market Capitalisation (US Dollars)	Percentage of market capitalisation
IFRS	90	30%	841,020,300,539	69%
HKFRS	161	54%	319,844,402,277	26%
ASBE	45	15%	57,268,715,905	5%
Total	296	100%	1,218,133,418,721	100%

Source:- <http://www.ifrs.org/Use-the-world-over/Documents/Jurisdiction-profiles/China-IFRS-Profile.pdf> accessed on 25th August 2018



Note:

Universal Financial Reporting measures (IFRS)

Hong Kong Financial Reporting Standards (HKFRS)

Chinese Accounting Standards (ASBEs)

India

The Institute of Chartered Accountants of India (ICAI) has announced that IFRS will be obligatory in India for cash related enunciations for the periods beginning on or after 1 April 2016 of every an arranged way. There is a guide issued by MCA for choice of IFRS. Hold Bank of India has communicated that budgetary clarifications of banks ought to be IFRS-predictable for periods beginning on or after 1 April 2011.

The ICAI has in like manner communicated that IFRS will be associated with associations above INR 1000 crore (INR 10 billion) from April 2011. Stage quick congruity purposes of enthusiasm for different associations in India:

Stage 1:Opening resource report as at 1April 2011*

I.Associations which are a bit of NSE Index –Nifty 50

II.Associations which are a bit of BSE Index –Sensex 30

- a. Associations whose offer or diverse securities are recorded on a stock exchange outside India
- b. Associations,regardless of whether recorded or not,having complete resources of more than INR 100 crore (INR 10 billion)

Stage 2:Opening bookkeeping report as at 1st April 2012*

Associations not secured in arranging I and having all out resources outperforming INR 500 crore (INR 5 billion)

Stage 3:Opening bookkeeping report as at 1st April 2014*

Detailed associations not secured in the formerly stages * If the fiscal year of an association starts at a date other than 1 April, at that point it may set up its opening resource report at the start of right away taking after cash related year.

The Ministry of Corporate Affairs issued the guide for move to IFRS. Plainly India has yielded move to IFRS and the discussion was made on 22 January 2010. In the fundamental stage, affiliations merged into Nifty 50 or BSE Sensex, and affiliations whose securities are recorded on stock trades outside India and every last unique associations having hard and fast assets of INR 10 billion will get ready and show money related elucidations utilizing Indian Accounting Standards focused with IFRS. As appeared by the press note issued by the lawmaking body, those affiliations will change over their first asset report as at 1 April 2011, applying bookkeeping measures united with IFRS if the bookkeeping year closes on 31 March. This translates the move date will be 1 April 2011. As exhibited by the before course of action, the move date was settled at 1 April 2010.

The press note does not clear up whether the full course of action of money related declarations for the year 2011– 12 will be coordinated by applying bookkeeping rules focused with IFRS. The postponement of the move may make affiliations cheerful; in any case it will undermine India's position.

As indicated by the warning reported by the Ministry of Corporate Affairs (MCA) on February 16, 2015, a reexamined guide for the usage of "Ind-AS" has been made for the merging of India's bookkeeping principles with IFRS. This guide gave by the MCA will cover a stage insightful approach, which will center essentially on an organization's total assets. The total assets of substances having INR 5000 million (USD 77 million IFRS reception by nation roughly) or more are required to embrace Ind AS compulsorily to account periods starting on or after April 1, 2016.

The elements which are not secured according to the guide can willfully embrace the Ind AS.

Particulars	Voluntary Adoption	Phase I	Phase II
Financial Year of Adoption	2015-2016 or thereafter	2016-17	2017-18
Corresponding Previous Year for comparatives	2014-2015 or thereafter	2015-16	2016-2017
Companies within Ind AS coverage :	Any company can voluntarily adopt Ind AS	All companies with net worth > = Rs. 500 crores	All companies listed or in the process of being listed
(i) Listed Companies			
(ii) Unlisted Companies			
(iii) Groups Companies		Yes	

The generally recognized accounting measures, which will incite a comprehensive recognized accounting system for the associations in India, will suggest certain moves that will help to arrange its accounting checks.

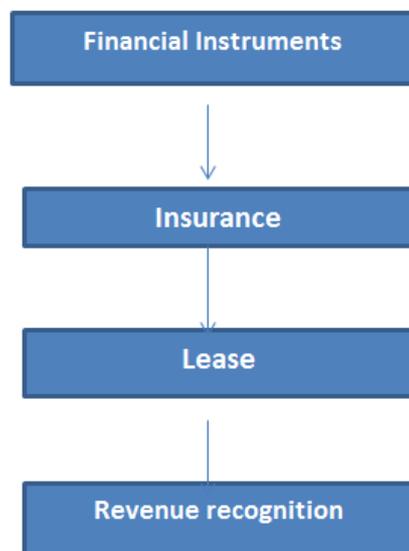
The best approach to financial change is a sound cash related revealing structure oversight by awesome organization, unmistakably portrayed quality standards and set up authoritative framework. In India, the Institute of Chartered Accountants of India (ICAI), as the accounting models arranging body in our country, has continually figured accounting benchmarks that have withstood the trial of time. As we globalize, the significance of association with International Financial Reporting Standards (IFRS) increases. In today's circumstance of overall business town India can't stand to shield itself from the headways and changes happening far and wide.

United States of America (USA)

The likelihood of International Financial Reporting Standards (IFRS) being totally gotten in the United States within the near future is ending up more unrealistic, as the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) continue moving a long way from full gathering of their measures, as demonstrated by another report from Fitch Ratings. IFRS apportionment will help in the choosing the cost and favorable circumstances from the cash related trades in examination with the Generally Accepted Accounting Principles (GAAP). Majorly three territories in the field of bookkeeping was considered for the investigation like scholarly world, corporate and the general population (Smith 2009)

In USA two standard-setting sheets worked out worldwide bookkeeping norms in the four zones figured as underneath:

GLOBAL ACCOUNTING STANDARDS



The necessities of IFRS have influenced the numerous US organizations – open or private, huge or little-through cross-fringe, Merger & Acquisitions movement, and due to the IFRS announcing requests of partners outside the US. The universal appropriation of IFRS consistently implies that it will have effect on US MNC's which will become more grounded.

Looking into the prospect of a financial specialist, the need to comprehend IFRS is seemingly considerably more prominent. US speculators continue searching abroad for venture openings. Over \$7 trillion of US capital is put resources into non-US securities. The US showcases likewise stay open to non-US organizations that set up their money

related proclamations operating IFRS. There are at present other than 450 non-US filers with advertise capitalization in the various of stacks of US dollars who utilize IFRS without conciliation to US GAAP.

To help speculators and preparers in winding up monetarily, an extensive knowledge of the real differences between IFRS and US GAAP is required, & in addition knowledge in the stages of progress coming soon. It centers on the hugest and basic contrasts.

Organizations will be influenced by selection of IFRS at various circumstances and, as it were, relying upon variables, for example, measure, industry, geographic cosmetics, M&A action, and worldwide extension designs.

Effect of IFRS on money related framework

IFRS is designed as a common global language for the business transactions. Tremendous amount of concentrates in many parts of the world inspected the effect of IFRS on corporates. The determination of IFRS has emphatically influenced substances; cash related announcing and broader money related settings. Daske et al. (2008) expressed that associations accepting IFRS in the time of compulsory allotment experience sweeping extensions in business segment liquidity yet mixed outcomes for the cost of capital. Regardless, Li (2010) broke down the consequence of IFRS on the rate of significant worth in the European Unification and found that required adopters of IFRS encounter basic reductions in the cost of capital in the times of required choice, yet just in countries with sturdy legitimate usage.

Distinctive investigations have broken down the possessions of IFRS allotment on accounting excellence. Goodwin et.al (2006) focused on the impression of IFRS in Australia in association with the measure of components. Tinier companies adopting fewer changes upon IFRS allotment and experienced additions in net wage and esteem. On the other hand, greater firms had various adjustments, unimportant extensions to net wage, and also a reducing in esteem. Their choice is that the gathering of IFRS has been originate to have slight impact on the bookkeeping idea of more diminutive firms, and a greater impact on the bookkeeping idea of greater firms. Goodwin et.al (2007) found, that on an ordinary, IFRS expedited developments in liabilities and impact extent besides reductions in esteem and wage. The disclosures are unswerving with the eventual outcomes of Hung et.al (2007), who engrossed on the bare essential cash related clarification effects of utilizing to grasp IFRS a quick examination of budgetary verbalizations orchestrated underneath IFRS and German GAAP.

Barth et.al (2008) reviewed a development in bookkeeping eminence coming to fruition which resulted the choice of IFRS in 21 countries that effectively recycled private GAAP. They surmised the substances money related clarifications under IFRS are displayed to less wage organization, all the more propitious affirmation of disasters, and more regard applicability of accounting wholes besides the components using simply private GAAP. Furthermore, the idea of accounting evidence is sophisticated for firms that smear IFRS than for those that don't. Superfluous evidence about the influence of IFRS allocation on cash related enunciations starts from contemplates that stretched out the examination to consistent financial extents (Stent et.al 2010). The authors expressed that allotment of IFRS in New Zealand provoked a tremendous augmentation in accountabilities and reduction in esteem for private division components. Acclimations to wage charges, laborer focal points and cash related instruments were the guideline purposes behind developments in liabilities and decreases in esteem.

Conclusion

To take a gander at the effect of IFRS on money related verbalizations and some gigantic degrees with the assistance of a coherent examination on Wipro. Wipro Limited together with its assistants is a standard India based association that offers things and associations in IT business, purchaser care and lighting other than base arranging. The IT business wires IT associations and things. It contains programming associations, BPO associations and things. The affiliation has its property district in America, Europe.

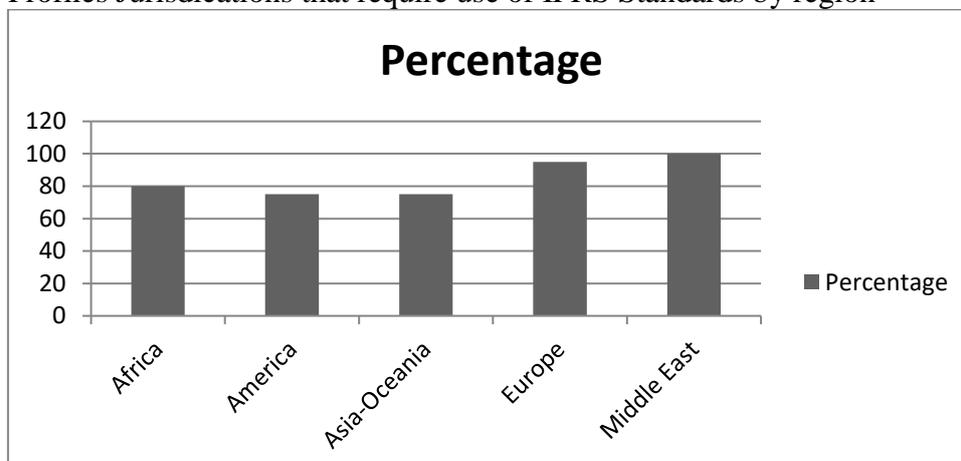
The ideology of the standards ensured compliance which can showcase the true and fair view picture of the transactions taking place in the financial year and are acknowledged as per the Companies Act 2006.

Organization analysts are required to guarantee that organization accounts are set up as per the principles and to report any critical takeoff from the gauges to investors. The guidelines help to build consistency in the introduction of organization accounts and to decrease the subjective component in divulgence of data (Randall et.al 2012).

The adoption and compliance of IFRS will forecast the information in a way which will bring up the uniformity in the recording of the financial transactions and bring up the comparability which will be more effective while the accounting principles are basic rules that are applied in recording transactions and preparing financial statements.

There are numerous experiences for the IASB in endeavoring to exchange their bookkeeping ideas to different nations, all of which have distinctive business proprietorship and financing framework, diverse societies, diverse expert parts and contrasts in the level of training and experience of expert bookkeepers. In any case, we contend that the IASB and different controllers, in cooperation with the nationwide and universal, prerequisite to exertion towards lessening the distinctions and help encourage the procedure of true not simply by right bookkeeping union. Additionally look into is expected to recognize contrasts between different areas and nations in the post-merging period, and to experimentally test the association of the proposed factors. Until the point that these distinctions crosswise over different locales are better comprehended and disposed of, compelling meeting will simply be a myth, instead of a reality (P. Chand &Chris Patel, 2011)

Profiles Jurisdictions that require use of IFRS Standards by region



Source:- <https://www.ifrs.org/use-around-the-world/why-global-accounting-standards/> accessed on 19th November 2018

References

1. Abedana, Virgil & Boasiako Omane-Antwi, Kwame & Oppong, Moses. (2016). Adoption of IFRS / IAS in Ghana: Impact on the Quality of Corporate Financial Reporting and Related Corporate Tax Burden. *Research Journal of Accounting and Finance*. 10. 10 - 25.
2. AICPA (2008). SEC Road Map for Transition to IFRS available. Retrieved from Journal of Accountancy: [www.journalofaccountancy.com/web/roadmapfor transition to ifrs](http://www.journalofaccountancy.com/web/roadmapfortransitiontoifrs) available.
3. Barth, M., Landsman, W. and Lang, M. (2008), "International Accounting Standards and Accounting Quality", *Journal of Accounting Research*, 46:467-498.
4. Daske, H., Hail, L., Leuz, C. and Verdi, R. (2008), "Mandatory IFRS Reporting Around the World: Early Evidence on the Economic Consequences", *Journal of Accounting Research*, 46(5): 1085-142.
5. Deloitte. (2009), "First Time Adoption of International Financial Reporting Standards: A Guide to IFRS 1". Retrieved 5 October 2012 from: <http://www.iasplus.com/dttdpubs/>
6. Dennis W. Taylor, (2009) "Costs-benefits of adoption of IFRSs in countries with different harmonization histories", *Asian Review of Accounting*, Vol. 17 Issue: 1, pp.40-58, <https://doi.org/10.1108/13217340910956504>
7. Ernest & Young Thinking IFRS? EY Guide on Transition to IFRS. http://www.ey.com/gl/en/issues/ifrs/issues_gl_ifrs_nav_publications
8. Goodwin, J. and Ahmed, K. 2006, "The Impact of International Financial Reporting Standards: Does Size Matter?" *Managerial Auditing Journal*, 21:460-475.
9. Goodwin, J., Ahmed, K. and Heaney, R. 2007, "The Effects of International Financial Reporting Standards on the Accounts and Accounting Quality of Australian Firms: A Retrospective Study", Working Paper, and the Hong Kong Polytechnic University.
10. Hung, M. and Subramanyam, K. 2010, "Financial Statements Effects of Adopting International Accounting Standards: The Case of Germany", *Review of Accounting Studies*, 12(4):623-657.
11. Li, S. 2010, "Does Mandatory Adoption of International Financial Reporting Standards in the European Union Reduce the Cost of Equity Capital?" *The Accounting Review*, 85:607-636.
12. Marie-Josée Ledoux, Denis Cormier, (2013) "Market assessment of intangibles and voluntary disclosure about innovation: the incidence of IFRS", *Review of Accounting and Finance*, Vol. 12 Issue: 3, pp.286-304, <https://doi.org/10.1108/RAF-Apr-2012-0033>
13. Muhammad Ansar Majeed, Xian-zhi Zhang, (2016) "Competitive pressure and managerial decisions: Product market competition and earnings quality in China", *Chinese Management Studies*, Vol. 10 Issue: 3, pp.559-592.
14. Nick Difazio & DJ Gannon (2009), IFRS Roadmap: Planning a Safe, Economical Trip, <https://www2.deloitte.com/insights/us/en/deloitte-review/issue-5/ifrs-roadmap-planning-a-safe-economical-trip.html>
15. Pelucio-Grecco MC, Geron CMS, Grecco GB (2016) Adoption and use of IFRS: Evidence from Brazil. *J Account Mark* 5:196. doi: 10.4172/2168-9601.1000196
16. Phan, Duc Hong Thi. (2014) "International Financial Reporting standards (IFRS) Adoption in Vietnam: If, when & how"? *Corporate Ownership & Control*, 11(4-4), 428-436. <http://doi.org/10.22495/cocv11i4c4p6>

17. P. Chand and M. White.(2007) —A critique of the influence of globalization and convergence of accounting standards in Fiji, *Critical Perspectives on Accounting*, Vol. 18,2007 pp. 605–622.
18. P. Chand and Chris Patel, (2011), Chapter 2 International Convergence of Financial Reporting Standards: Evidence from the South Pacific Region, in Parmod Chand, Chris Patel (ed.) *Achieving Global Convergence of Financial Reporting Standards: Implications from the South Pacific Region (Studies in Managerial and Financial Accounting, Volume 22)* Emerald Group Publishing Limited, pp.7 – 30
19. Ray Ball (2016) IFRS – 10 years later, *Accounting and Business Research*, 46:5, 545-571, DOI: 10.1080/00014788.2016.1182710\
20. Randall. H and Hopkins. D, (2012). *Cambridge International AS and A level Accounting*. 1st ed. Indian: Cambridge Press
21. Smith, Kenneth (2009),” A Cost –Benefit Analysis of the Transition from GAAP to IFRS in the United States”. Honors Projects in Economics. Paper 9 http://digitalcommons.bryant.edu/honors_economics/9
22. Stent, W., Bradbury, M. and Hooks, J. (2010), “IFRS in New Zealand: Effects on Financial Statements and Ratios”, *Pacific Accounting Review*, 22(2):92-107.
23. SwamynathanShobhana, Dr. Sindhu(2011) Financial Statement Effects On Convergence to IFRS- A Case Study in India, *Zenith International Journal of Multidisciplinary Research*, Vol.1 Issue 7 November. Pp 317-336
24. S. Botzem, S. Quack & S.G. Zori (2017). International Accounting Standards in Africa: Selective Recursivity for the 'Happy Few'? *Global Policy*, 8 (4), 553-562. doi: <http://dx.doi.org/10.1111/1758-5899.12514>
25. Zhou, H., Xiong, Y. Ganguli, G.(2009)”Does The Adoption Of International Financial Reporting Standards Restrain Earnings Management? Evidence from An Emerging Market”, *Academy of Accounting and Financial Studies Journal* 13, pp 43-56.

Web References

1. <http://www.accaglobal.com/content/dam/acca/global/PDF-technical/financial-reporting/tr-124-001.pdf>
2. https://resource.cdn.icai.org/23733comparision_IFRS-Ind%20AS.pdf
3. <https://www.ifrs.org/use-around-the-world/why-global-accounting-standards/>
4. <https://www.ifrs.org/use-around-the-world/adoption-and-copyright/>
5. <https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/ghana/>
6. <http://www.sciencedupress.com/journal/index.php/ijfr/article/download/12695/7839>

WTO And Indian Agricultural Export

Abhishek Kumar Singh*

Dr. Abhilash Kumar Srivastava**

Yogesh Arora***

Abstract

India is an agriculture based economy. Agriculture sector is the most significant sector of Indian economy. This sector provides around 58% employment to the people of the country and contributes 17.32 % in the GDP of the country. World Trade Organisation (WTO) is an organization which frames rules and regulation in respect of international trade, so it becomes quite relevant to see the impact of WTO agricultural provision on export of agricultural products of India. Now more than 20 years has been over since establishment of WTO. By this research paper we wanted to see the agriculture product's export performance after two decades of formation of WTO.

Keywords- Agriculture, WTO, Indian Economy, Export etc.

Introduction

WTO came in to existence in 1995. Prior to WTO, there was an agreement called GATT (General Agreement on tariff and trade). GATT was also applied to trade in agriculture. But the provision of GATT on agriculture were very partial and somewhere they were giving advantages only to the developed countries in many ways – Huge domestic subsidies were given by the developed countries for the growth of their agriculture sector which in turn led to excessive production of agriculture products and developed countries dumped their agriculture products price to make them more competitive in foreign market. They were also implementing import restrictions on agriculture products of developing countries. So basically there was a need of strict provision on agriculture so that a fair environment would be created for agricultural products. So in WTO provision a separate provision is incorporated related to trade in agriculture called Agreement on agriculture which has following three broad areas of agriculture and trade policies.

a) Market Access-

i) Tarrification of all non-tariff barriers

ii) Setting up of a minimum level for import of agricultural products by member countries as a share of domestic consumption.

b) Domestic support- There are two main objectives related to domestic support

i) Identify acceptable measures that support farmers.

ii) Identify to deny unacceptable trade distorting support to the farmers.

c) Export subsidies-The AOA incorporates many kinds of subsidies to which reduction commitments apply.

So need of this paper is to see the effect of WTO on the export of agriculture product after two decades of its establishment.

* Research Scholar, Department of Commerce, Atarra PG College, Atarra (Banda), U.P.

** Associate Professor, Department of Commerce, Atarra PG College, Atarra (Banda), U.P.

*** Research Scholar, Department of Commerce, Atarra PG College, Atarra (Banda), U.P.

Review of Literature

Various literatures have been reviewed related to this topic, some of them are following:

- i) Sreshgiri, B.Honkan, G.G. and Dr.L.d.Valkenthe (2014)- concluded that it can be said that WTO provisions posed no real threat to Indian agriculture through aspect related to IPR, removal of tariff and non-tariff barriers and market access need to be dealt with constant vigil and suitable _
- ii) Singh, Dr. Shamsheer (2014) - concluded in his study that India has mixed results: The WTO has affected the trade slightly positively; but not as expected.
- iii) WTO and Indian Agriculture (2006) report concluded that post WTO liberalisation helped India to achieve small increase in agriculture exports, whereas it resulted in sharp and continuous increase in imports.

Objectives

- i) To have a view on main provision of WTO regarding agriculture sector.
- ii) To study the performance of Indian agricultural export from the year 1995 to 2015.

Research Methodology

This research is mainly based on the secondary source of data. Data has been taken from the APEDA's (Agricultural and processed food product's export developmental authority) agri exchange website of Government of India.

Some data is also collected from DGCIS and website under the commerce ministry GOI. This research is descriptive in nature.

Result and Discussion

WTO established on January 1, 1995, so around more than 20 years completed since its set up till now. We divide this journey of WTO in to two decades i.e. from the year 1995-96 to the year 2005-06 and from the year 2005-06 to the year 2015-16 to see the export performance of top 10 agriculture commodities, in terms of their export value. For the first decade (table 1) top ten commodities is taken from the year 1995-96 and for the second decade (table 2) top ten commodities is taken from the year 2005-06 in terms of their export value.

(Table 1 Showing Growth in agricultural export of India, during the year 1995-96 to 2005-06)

S.N.	Top 10 commodity in terms of export value of the year 1995-96	Export in the year 1995-96 (Value in US\$ Mill.)	Export in the year 2005-06 (Value in US\$ Mill.)	Growth in Value (Value in US\$ Mill.)	Growth in Percentage
1	NON BASMATI RICE	1111.34	717.91	(393.43)	(35.40 %)
2	BASMATI RICE	254.31	687.39	433.08	170.29 %
3	BUFFALO MEAT	165.92	595.91	429.99	259.15 %
4	WHEAT	109.65	125.94	16.29	25.94 %
5	MILLED PRODUCTS	99.56	16.70	(82.86)	(88.95 %)
6	FRESH ONIONS	68.98	159.96	90.98	131.89 %
7	GROUND NUTS	68.96	116.04	47.08	68.27 %
8	GUAR GUM	67.92	237.01	169.09	245.20 %
9	JAGGERY & CONFECTIONARY	46.03	36.44	(9.59)	(20.83 %)
10	PULSES	39.41	254.05	214.64	544.63 %
	TOTAL	2032.08	2947.35	915.27	45.04 %

If we talk about first decade from the establishment of WTO, Total export of agriculture sector during the year 1995-96 was 2358.22 million US dollar and in the year 2005-06 it was 4219.43 million US dollar which means 2187.21 million US dollar growth in export value of agriculture products which is around 92.74% growth from the year 1995-96 as per data released by DGCI&S Kolkata.

From the data of table 1 following information is found.

- I. From the year 1995-96 to 2005-06, there was around 45.04 % growth in the export of top 10 agriculture commodities in terms of their export value and was 915.27 million US dollar in terms of growth in export value.
- II. It is also found that there was a negative growth (decline) of 35.40 % in the highest exported commodity i.e. non – basmati rice and a huge decline in the export of milled products which was 88.95 % and jaggery and confectionary items also seen a decline around 20.83 % from the year 1995-96 to the year 2005-06.
- III. All other top 10 commodities except above three, increased in their export value. Highest growth in export is seen in pulses which is around 544.63 % followed by buffalo meat 259.15 %, in guar gum 245.20%, in basmati rice 170.29%, in fresh onions 131.87%, in ground nuts 68.27% and in wheat 25.94% growth were seen during first decade of establishment of WTO.

(Table 2 Showing Growth in agricultural export of India, during the year 2005-06 to 2015-16)

S.N.	Top 10 commodity in term of export value of the year 2005-06	Export in the year 2005-06 (Value in US\$ Mill.)	Export in the year 2015-16 (Value in US\$ Mill.)	Growth in Value (Value in US\$ Mill.)	Growth in Percentage
1	NON BASMATI RICE	717.91	2368.64	1650.73	229.93 %
2	BASMATI RICE	687.39	3477.98	2790.59	405.96 %
3	BUFFALO MEAT	595.91	4069.68	3473.77	582.93 %
4	PULSES	254.05	252.42	(1.63)	(0.64 %)
5	GUARGUM	237.01	496.57	259.56	109.51 %
6	FRESH ONIONS	159.96	472.73	312.77	195.53 %
7	DAIRY PRODUCTS	152.85	115.27	(37.58)	(24.58 %)
8	WHEAT	125.94	164.22	38.28	30.39 %
9	CEREAL PREPARATIONS	122.79	513.03	390.24	317.81 %
10	GROUND NUTS	116.04	620.36	504.32	434.60 %
	TOTAL	3169.85	12550.90	9381.05	295.94 %

Total export of agriculture sector during the year 2005-06 was 4219.43 million US dollars and in the year 2015-16 it was 16412.76 million US dollar which is around 288.98 % growth from the year 2005-06 to year 2015-16.

Following key points are found from the table 2.

- I. From the year 2005-06 to the year 2015-16, there was 295.94 % growth in the export of top 10 agriculture commodities.
- II. From table 2 it is noticed that dairy products faced decline of 24.58 % followed by pulses 0.64 % in their export value from the year 2005-06 to the year 2015-16.

- III.** All other top ten commodities except above two noticed a growth, which was highest in buffalo meat 582.93 % followed by ground nuts 434.60 %, in basmati rice 405.96%, in cereal preparations 317.81 % and so on.

Conclusion

From the above analysis we can conclude that since the establishment of WTO, Indian agriculture export increased positively, however it was slower growth in first decade i.e. around 92.74% (and 45.04 % growth in respect of top 10 agriculture export commodity of 1995-96) and faster growth in second decade i.e. 288.98% (and 295.94% growth in respect of top 10 agriculture export commodities of the year 2005-06). We can conclude that WTO affected Indian agricultural export positively, slightly slower in first decade and rapid growth in second decade.

References

1. Jeffery, J. Schott, "The future value of the WTO in world trade after the Uruguay round – prospects and policy options for the twenty first century"
2. Singh, Dr Shamsheer, "Analysis of trade before and after the WTO: A case study of India", *Global Journal of finance and management*, volume 6, November 8, pp. 801-808, 2014.
3. Website of World Trade Organisation, <https://www.wto.org/>
4. Website of export of Agr prod, <http://agriexchange.apeda.gov.in/indexp/reportlist.aspx>
5. Website of Commerce ministry, GOI <http://commerce-app.gov.in/eidb/default.asp>
6. Website of foreign trade data dissemination portal <http://121.241.212.143/>

Impact of marketing strategies on customer's selection of Hotels: with special reference to Jaipur

Pradyuman Singh Rathore*

Dr. Yashwant Singh Rawal**

Prof. (Dr.) Jagdeesh Prasad***

Abstract

All Hotels apply various marketing strategies which give Impacts on customer's selection of hotels. Factors play significant role in the selection of hotels. Customers are very much concerned regarding the diverse factors such as Room Facilities, Entertainment Services, Location, and Safety & Security, Food & Beverage Services, Staff Handling Skills, and of course the cost of the stay. Each & every factor is an essential for selection of hotel. In today's high competitive market all hotels strive to execute new & latest services to build the relationship with customers.

Marketing strategies are strongly significant for the success of an organization. Hotels restructure their product & services and also commence new product line for gaining the attraction of customers. Aim of this paper is to examine the impact of marketing strategy on customer's selection of hotels in Jaipur. For testing this null hypothesis has been formulated. Percentage, mean and one sample 't' test were applied on 400 sample.

Key words: Hotel industry, marketing strategies.

Introduction

The Tourism industry is made up of a number of sectors such as Hospitality, Transportation; Food & Beverage service Industry, Travel Agencies & Tour Operator, Retail Sector and other Event Organizers. Guest's satisfaction with each component consistently affects their overall satisfaction of visited Hotel. Hotel Industry which is vital and play important role for the guest's overall experience. One of the challenges that is faced by small and medium hotels globally especially those in developing countries is customer satisfaction. Although, hotels are increasing globally, offering innovative services and restructuring their services in order to satisfy the changing needs of customers.

Hotel Industry is growing worldwide; many hotels today tend to increase their investments with the aim of improving service quality and perceived value for guests in order to achieve better customer satisfaction and loyalty, which leads to a better relationship with each customer.

All Hotels apply various marketing strategies which give Impacts on customer's selection of hotels. Factors play significant role in the selection of hotels. Customers are very much concerned regarding the diverse factors such as Room Facilities, Entertainment Services, Location, and Safety & Security, Food & Beverage Services, Staff Handling Skills, and of

* Research Scholar, Amity University Rajasthan

** Amity University Rajasthan

*** Amity University Rajasthan

course the cost of the stay. Each & every factor is an essential for selection of hotel. In today's high competitive market all hotels strive to execute new & latest services to build the relationship with customers.

Marketing strategies are strongly significant for the success of an organization. Hotels restructure their product & services and also commence new product line for gaining the attraction of customers.

Jaipur Hotels have established the high level of reputation in providing services and creating relationship with customers. All Forts, Havelis, have been converted in the luxury hotels to provide heritage ambience of Rajputs to customers. Guests experience the uniqueness of History of Rajasthan. Marketing strategies include this factor as an important tool to attract and build the relationship with guests.

Marketing strategies affect the customers to select the hotel though; customers prefer to believe in genuine advertisement and commitments by Hotel. There are various impacts of marketing strategies Positive and Negative factors, which are crucial for the selection of Hotel.

This paper is divided into several sections. First, a brief introduction of main concepts of interest is provided. Next, the literature review and research methodology used for this study is presented, followed by data analysis and discussion of the results. Finally, the article concludes with main research findings.

Review of literature

Dr. Shreya Bhargav (2017) Suggested significance of marketing blend in hospitality industry to sustain market share of the hotels. Based on this ground, Hospitality in India is an elderly ritual, and the demand for travel and tourism in India is expected to boost yearly by 8.5%, travel and tourism in India also accounts for about 11% of total population. Government of India has taken and appealing various initiatives to strengthen this industry.

J Bhayani & N Rana (2016) mentioned during 2007-2008 the foreign exchange earnings and GDP on India have increased. Hotels are a major service industry which contribute maximum through tourism in terms of foreign exchange earnings and it also helpful for increasing GDP of India. Hence, tourism also play vital role in increasing trend in GDP and foreign exchange earnings in India.

Kazakov & Predvoditeleva (2015) mentioned that Russian and American tourists have different behavioural patterns when making hotel choice decisions using online resources. It refers to that all consumers have distinguished personality behaviour to select any hotel through online marketing tool. It demonstrates the importance of social media and other Internet tools for consumer choice in the Russian Federation and the USA and for entire globe.

Rendón & Martínez (2014) Faced with this situation, highlights the growing intensification of competition That is taking place in the industry, reflecting Both investment fever that is living in the hotel industry in Mexico,; such as the landing of large international chains in this Country, it that required the large number of small and medium hotel companies Consider new marketing strategies to Improve their competitiveness and enable to continue playing the important role in this industry have developed in recent medical support.

Radojevic & Stanišić (2014) measured customer satisfaction in hospitality industry in capital cities of Europe by using hierarchical regression technique. Paper concluded that

numbers of star, room price, air conditioning, lobby bar, and free Wi-Fi factors leave positive impact on level of customer's satisfaction with regard to selection of hotel.

Galicic&Laškarin (2014) suggested that enterprise's human resource management department have to select the best employees to whom the organization's marketing and sales managers will express ideas concerning new products. It is clear that Enterprise should invest in their employees. However, it is necessary to differentiate concepts and thinking, as well as methods and tools that can make an enterprise's products and services attractive and satisfactory leading to its employees who are accountable for delivering these products and services to end consumers.

JammareeChoosrichom (2011) contributed by "Factors Influencing the Selection of Hotels/Resorts in Lantayai Island, Krabi, Thailand" This Study identified five star hotel factors which are deemed important to travelers. These factors are Safety & Security, Value, Staff service quality, location and room facilities qualities, respectively and are considered to be the influential factors in determining travelers' hotel choices.

Cho & Chui (2001), identified the seven hotel factors, which are deemed important to travellers. 'Staff Service Quality', 'Room Qualities', 'General Amenities', 'Business Services', 'Value', 'Security' and 'IDD Facilities'. Out of these hotel factors, 'Staff Service Quality', 'Room Qualities' and 'Value' are considered to be the influential factors in determining travellers' overall satisfaction levels and their likelihood of returning to the same hotels.

Research Methodology

Objective of study

To study the impact of Hotel's marketing strategies on the customers' selection of hotels.

Below null hypotheses has been formulated

H01: There is no significant impact of Hotel's strategies on the customer's selection of hotels.

Table: 1: Research methodology

Research Design	Descriptive
Data Collection Method	Purposive sampling
Data Sources	Primary & Secondary
Sample Area	Hotel costumers of Jaipur city
Sample Size	400
Type Of Questionnaire	Structured
Research Instrument	Questionnaire
Statistical Tools Used	mean, percentage, standard deviation, one sample "t" test
Scaling techniques	Likert's five point scale
Reliability Statistics	Cronbach's Alpha: 0.746, Number of Items: 11

Data interpretation and analysis

Table: 2 Marketing Strategies Influencing Customers' Selection of Hotels

Weights	1	2	3	4	5				
Influence Level									
Marketing Strategies	Not at all Influential	Slightly Influential	Somewhat Influential	Moderately Influential	Extremely Influential	Total (N)	Weighted Total	Weighted Average	Rank
Well Designed Website	15	16	66	139	164	400	1621	4.05	1
Presence on Social Networks	42	26	54	124	154	400	1522	3.81	7
Discount & Offers	28	34	61	100	177	400	1564	3.91	4
E-mail marketing	6	78	89	110	117	400	1454	3.64	8
Telemarketing	24	51	101	119	105	400	1430	3.58	9
Guest History Management through Complementary Gifts, Wishes etc.	12	28	59	139	162	400	1611	4.03	2
Advertisement in traditional media	20	22	78	141	139	400	1557	3.89	5
One to One/Personal Selling	39	45	79	135	102	400	1416	3.54	10
Membership Facility (Loyalty Points)	25	33	59	142	141	400	1541	3.85	6
Online Marketing	16	29	67	147	141	400	1568	3.92	3

Chart: 1 Marketing Strategies Influencing Customers' Selection of Hotels

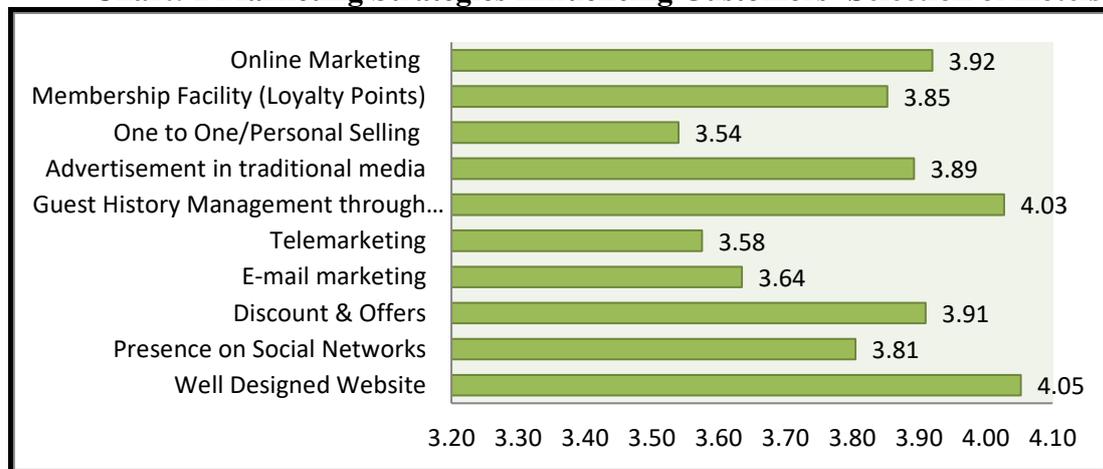


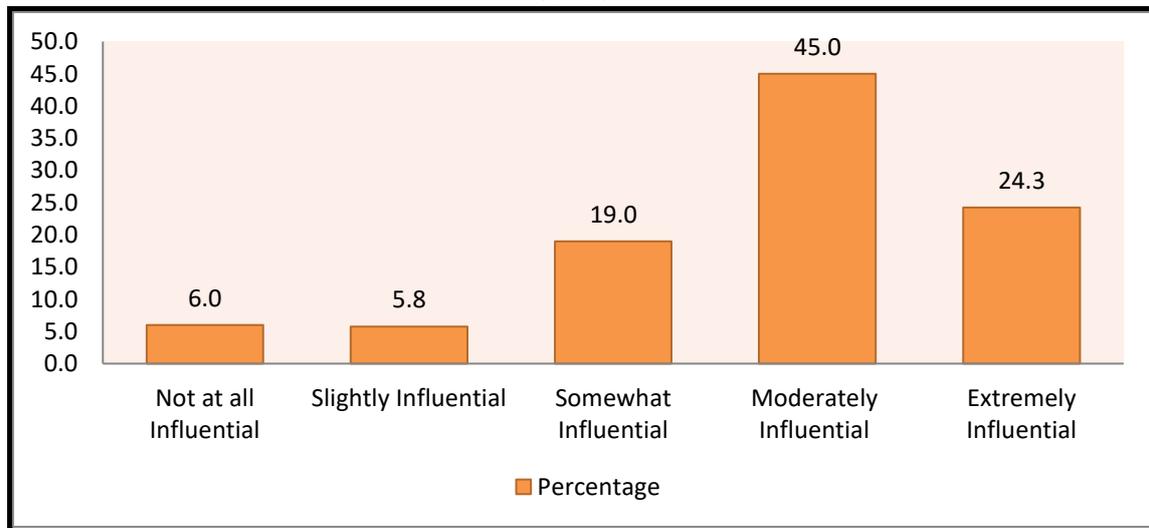
Table is showing the overall impact of Hotel's Marketing Strategies on the Customers' Selection of Hotels. Majority of respondents (N=180, Percentage=45) said that Hotel's

Marketing Strategies moderately influence the Customers' Selection of Hotels followed by 24.3 % respondents (N=97) who said that marketing strategies are extremely influential. Only 6% respondents (N=24) said that marketing strategies are not at all influential. According to mean score (3.75) marketing strategies of hotel moderately influence the customers' selection of hotels.

Table 3: Overall Impact of Hotel's Marketing Strategies on the Customers' Selection of Hotels

Response	N	Percentage
Not at all Influential	24	6.0
Slightly Influential	23	5.8
Somewhat Influential	76	19.0
Moderately Influential	180	45.0
Extremely Influential	97	24.3
Total	400	100.0
Mean Score	3.75	
Level of Influence	Moderately Influential	

Chart: 2 Overall Impact of Hotel's Marketing Strategies on the Customers' Selection of Hotels



H04: There is no impact of Hotel's marketing strategies on the customers' selection of hotels.

H14: There is a significant impact of Hotel's marketing strategies on the customers' selection of hotels

To test this hypothesis one sample t-test is applied against the theoretical mean=33, and results received are presented in table

Table 4: t- test Results to measure significant impact of Hotel's marketing strategies on the customers' selection of hotels.

Variable	Test Value = 33			Result
	t-value	degree of freedom	p-value	
Impact of Hotel's marketing strategies	7.179	398	0.000	Significant

Level of Significance = 5%

At 5% level of the t-statistic is significant which leads to the rejection of null hypothesis. The observed mean is above to the theoretical mean which signify the impact of Hotel's marketing strategies on the customers' selection of hotels so it can be concluded that there is a significant impact of Hotel's marketing strategies on the customers' selection of hotels.

Conclusion: From above research it can be said that there is significant impact of marketing strategy on customer selection of hotel. If Good marketing strategy would be adopted by hotels may increase their customers.

Recommendations

- Well designed and informative web site can play a major role in increasing sale of hotels
- Online marketing has good impact on customer's selection of hotel; hence hotels should target social media for digital marketing.

Bibliography:

Raymond K.S. Chu, Tat Choi (2000), An importance-performance analysis of hotel selection factors in the Hong Kong hotel industry: a comparison of business and leisure travellers, *Tourism Management elsevier*

JammareeChoorichom,(2011), Factors Influencing the Selection of Hotels/Resorts in Lanta Yai Island, Krabi, *Thailand by International Travellers,Veridian E-Journal, Silpakorn University*

TijanaRadojević, Nemanja Stanišić, NenadStanić, Marko Šarac (2014), Measuring Customer Satisfaction in the Hospitality Industry: An Empirical Study of the Hotels in the capital cities of Europe, *SintezaE-Business in tourism and hospitality industry*

Oscar H. Pedraza Rendón,Rubén Molina Martínez,María S. RamírezFlores(2014),Marketing Strategies for Hotel Industry Internationalization in Morelia , *Procedia-Social and Behavioral Sciences*

Vlado Galicic,MarinaLaškarin (2014), Internal Marketing in the Hotel Industry, Tourism and Hospitality Industry 2014, Conference preceding *Trends in Tourism and Hospitality Industry*

Sergey P. Kazakov, Marina D. Predvoditeleva (2015), How travellers use online and social media and channels to make hotel choice decisions, A comparative study of Russian federation and American tourist's online consumer behaviour, *Basic Research Programme working papers*

Dr. Sanjay J Bhayani, Sheetalaba N Rana (2016), A Study on Tourist Satisfaction towards Hotel Related Services in Gujarat Tourism, *International Journal of Advance Research in Computer Science and Management Studies*

Dr. Shreya Bhargav (2017), a Study on Marketing Mix of Hospitality Industry, *International Journal of Management, IT and Engineering*

A Study on Consumer Perception towards Green Marketing Practices in Kanniyakumari District

Dr. L.SANKARI PRIYA*

Dr.T.VIJAYAKUMAR**

R.CHENTHIL PERUMAL***

Abstract

Green Marketing is a part and parcel of overall corporate strategy; along with manipulating the traditional marketing mix (product, price, promotion and place), it requires an understanding of public policy process. This study is mainly confined to study on green marketing practices among the consumers in Kanyakumari District. The opinions of the consumers are also discussed with a view to the development of green marketing practices in Kanyakumari District. The study is descriptive based on both the primary and secondary data. The research problem, the hypotheses and interview schedule all have been formulated and framed accordingly. The suggestions of the study emerge from the inferences drawn from the sample survey of consumers in Kanyakumari District. The secondary data were collected from standard text books related to topic, leading journals, published reports and booklets, documents and records of the Government departments and the internet. The present study is an empirical one based on survey method. First hand data were collected from the field through interview schedule. It is concluded that the important factors that influence to buy green products among the male consumers are health advantage and environmental concern. The important factors that influence to buy green products among the female consumers are incremental standard of living of farmer community and health advantage. Buying of green products is increasing because of environmental and health issues associated with food production. The increase in consumers' interest in green products has been attributed among other issues to the growing demand for food free from pesticides and chemical residues. With the present study an attempt is made to describe the consumer perception towards green products. The main motives to purchase green products are health and environmental benefits, plus support for local or small farmers. In addition, an important factor that was revealed as a barrier to the development of green foods is consumer information. Increased consumer awareness of green labeling and their trust in green labels as well as increasing the availability and range of green food products, may be the most effective way of increasing their market share.

Keywords: Green Marketing, Green Products and Consumer Perception

Introduction

Green marketing includes the concept of planning, development and promotion of environment-friendly products or services to satisfy the needs of ultimate customer's

* Assistant Professor & Head, Department of Business Administration, S.T.Hindu College, Nagercoil

** Director, Training and Development, Loyola Institute of Science and Technology, Thovalai

*** Business Consultant

for quality, quantity, optimum price and service, without having a negative effect on the usage or its users. Therefore green marketing refers to a holistic marketing notion in which the production, marketing, consumption and disposal of products and services happen in a way that is less harmful to the environment with mounting awareness about the connection of global warming, non-biodegradable solid waste and harmful impact of pollution. It is a fact that both marketers and consumers are increasingly becoming aware of the need to switch over green products and services. The move from the existing marketing methods to green marketing may appear to be expensive in the short term, but it will absolutely prove to be crucial and beneficial, and cost effective in the long run.

Green marketing is rapidly changing the trendy marketing tactics as per the consumer demand in a sustainable way. Green marketing strategy reaps multiple benefits like increased revenue, reduced costs, new product development, risk mitigation, environment protection, global safety and enhanced brand reputation. Green marketing is needed to address environmental issues which influence all human society and natural atmosphere.

Green marketing has commanded tremendous attention in the context of global warming and climate change and as a result has forced both the customers on one side and the companies on the other to incorporate the principles of green marketing. Recently, it has drawn the attention of government too in this regard and paved the way for introducing many environment friendly policies. The divergence between limited resources and unlimited wants of human resource is to be used economically and in an environment friendly way. Companies should adopt innovative methods sustainable development in the competitive environment to enable the use of green marketing products. Using a green product safeguards the interests of its users, society and the environment. Setting up a responsive policy in this regard will maximize the health of the earth. Green Marketing, other similar terms used are Environmental Marketing and Ecological Marketing, is not all about manufacturing green products and services but encompassing all those marketing activities that are needed to develop and sustain consumer's eco-friendly attitudes and behaviors in a way that helps in creating minimum detrimental impact on the environment.

Statement of the Problem

Green Marketing is a part and parcel of overall corporate strategy; along with manipulating the traditional marketing mix (product, price, promotion and place), it requires an understanding of public policy process. On the other hand, there is growing interest among the consumers all over the world regarding protection of environment. Worldwide evidence indicates people are concerned about the environment and are changing their behavior. As a result of this, green marketing has emerged which speaks for growing market for sustainable and socially responsible products and services.

With rising concern of health issues and food safety, many consumers have turned their site attention towards green products. The increased consumers' interest in green food has been attributed among others to the growing demand for food free from pesticides and chemical residues. Green food promotes a balance among the humans, other living organisms and the nature. It also does not promote any artificial preservatives and they maintain the originality of food. This prevents excess use of harmful ingredients and thereby ensures health. This study is attempted to gain knowledge about consumer perception towards green products consumption and to see whether there is any potential which might change their behaviour. The rationale for carrying out this study is that

consideration for the environment could come only from well informed citizens who are aware of, and fully committed to their rights to a quality health and environment. Nevertheless, before any behaviour can be changed, it is necessary to evaluate the current state of consumers' awareness and knowledge. In order to know the practices of green marketing practices of consumers in Kanyakumari District, this study is carried out.

Objectives of the Study

The present work on green marketing has been carried out with the following objectives:

- To understand the consumer perception towards green marketing.
- To analyze the green marketing practices of consumers in Kanyakumari District.
- To suggest the measures to enhance the practice of green marketing in the study area.

Scope of the Study

This study is mainly confined to study on green marketing practices among the consumers in Kanyakumari District. The opinions of the consumers are also discussed with a view to the development of green marketing practices in Kanyakumari District.

Research Design and Methodology

The study is descriptive based on both the primary and secondary data. The research problem, the hypotheses and interview schedule all have been formulated and framed accordingly. The suggestions of the study emerge from the inferences drawn from the sample survey of consumers in Kanyakumari District. The secondary data were collected from standard text books related to topic, leading journals, published reports and booklets, documents and records of the Government departments and the internet. The present study is an empirical one based on survey method. First hand data were collected from the field through interview schedule. A sample of 150 respondents was selected for the study by using stratified random sampling method. The sample respondent for the study was stratified into 30 respondents each from five green products store in Kanyakumari District.

Hypothesis

- There is no significant difference in factors which influence to buy green products among different and profile variables of consumers in Kanyakumari District.
- There is no significant difference in perception towards green products among different profile variables of consumers in Kanyakumari District.

Limitations of the Study

Every researcher has to face several limitations. Some limitations can be controlled and some limitations are out of control of the researcher. In this particular study the researcher had some limitations as follows:

- (i) The Survey was limited to people residing in Kanyakumari District only.
- (ii) The respondents were less interested in answering the questionnaire, as they felt that it was an interruption to their regular work.
- (iii) The number of respondents was limited to 150 only.
- (iv) Some of the respondents are not open in giving their opinions.

Data Analysis

Table 1: Green Marketing Practices Followed By the Consumers – Ranking Analysis

Sl. No	Green Marketing Practices	Total Score	Average Score	Rank
1.	Optimum Utilization of Resources	9678	64.52	I
2.	Proper Waste Reduction/Management	7695	51.30	III
3.	Purchase of Green Product	8912	59.41	II
4.	Creating Awareness on Green practices	6408	42.72	IV

Source: Primary data

It is observed from Table 1 that 'Optimum Utilization of Resources' has been ranked as the first factor for green marketing practices followed by the consumers; 'Purchase of Green Product' has been ranked second; followed by 'Proper Waste Reduction/Management' in third position with 'Creating Awareness on Green practices' ranked as the fourth green practices followed by the consumers in Kanyakumari District. It is revealed that Optimum Utilization of Resources is first and main green practices followed by the consumers.

Table 2: Reasons for the purchase of green products

Sl. No	Reasons	No. of Respondents	Percentage
1.	Health fitness	48	32.0
2.	Taste	27	18.0
3.	Quality	20	13.3
4.	No preservatives added	49	32.7
5.	Variety	6	4.0
	Total	150	100

Source: Primary data

The table 4.12 describes that 32 per cent of the respondents prefers green products for health fitness; 18 per cent of the respondents for its taste; 13.3 per cent of the respondents for its quality of green products, 32.7 per cent of the respondents for its non preservative nature; and the remaining 4 per cent of the respondents for its variety.

Table 3: Type of green products purchase

Sl. No	Type of green products purchase	No. of Respondents	Percentage
1.	Food products	45	30.0
2.	Fruits	27	18.0
3.	Vegetable	58	38.7
4.	Health mix	11	7.3
5.	Oil	9	6.0
	Total	150	100

Source: Primary data

The table 3 clearly shows that 30 per cent of the respondents are using food products; 18 per cent of the respondents usually purchase of fruits because fruits are perishable in nature; 38.7 per cent respondents usually purchase vegetables because of the vegetables are perishable in nature; 7.3 per cent of the respondents are purchasing health mix and the remaining 6 per cent of the respondents are using oil.

Table 4: Opinion towards the price of green products

Sl. No	Opinion	No. of Respondents	Percentage
1.	Very high	42	28.0
2.	High	40	26.7
3.	Moderate	64	42.7
4.	Low	3	2.0
5.	Very Low	1	.7
	Total	150	100

Source: Primary data

The table 4 indicates that 28 per cent of the respondents opine that the price of green products are very expensive because inputs and procurement costs are more than conventional product; 26.7 per cent of the respondents express this as high price; 42.7 per cent of the respondents opine that the price of green products are moderate; 2 per cent of the respondents express as low and the remaining 0.7 per cent of the respondents opine that it is cheap comparison with non-green products in the study area.

Table 5: Main Reason for the Poor Preference of Green Products

Sl. No	Reasons	No. of Respondents	Percentage
1.	Highly expensive	23	15.3
2.	Non availability	84	56.0
3.	Local brand	21	14.0
4.	Unattractive packing	16	10.7
5.	Inferior quality	6	4.0
	Total	150	100

Source: Primary data

The table 5 shows that 15.3 percent of respondents reject because of too expensive price of green products; 56 per cent of the respondents are not able to purchase the green products because of the poor supply of green products, 14 per cent of the respondents reject for local brand, 10.7 per cent of the respondents are not prefer in green products because of the unattractive packing and the remaining 4 per cent of the respondents do not want to purchase the green products because of its poor quality.

Factors Influencing To Buy Green Products among Different Gender Group of Consumers

Consumers of different gender group have been influenced by different factors to buy green products. In order to find out the significant difference in factors influencing to buy green products among different gender group of consumers in Kanyakumari District, ‘t’ test is attempted with the null hypothesis as, “**There is no significant difference in factors influencing to buy green products among different gender group of consumers in Kanyakumari District**”. The result of ‘t’ test is presented in table 6.

Table 6: Factors Influencing to Buy Green Products among different Gender Group of Consumers

Factors	Gender (Mean Score)		T-Statistics
	Male	Female	
Price	3.7719	3.5376	1.579
Health advantage	4.1053	4.1183	0.113
Incremental standard of living of farmer community	3.9325	4.3118	2.555*
Convenience	3.9123	3.8495	0.428
Labeling	3.6316	3.5679	0.334
Environmental concern	3.9825	3.7312	1.739
Life shelf of the products	3.5263	3.3656	0.803

Source: Computed data

*-Significant at five per cent level

The table 6 shows the mean score of factors influencing to buy green products among different gender group of consumers along with its respective 'T' statistics. The important factors influencing to buy green products among the male consumers are health advantages and environmental concern and their respective mean scores are 4.1053 and 3.9825 and among the female consumers, incremental standard of living of farmer community and health advantage and their respective mean scores are 4.3118 and 4.1183. Regarding the factors influencing to buy green products, the significant difference among the different gender group of consumers, are identified in the case of incremental standard of living of farmer community since the respective 'T' statistics are significant at 5 per cent level, the null hypothesis is rejected.

Factors Influencing To Buy Green Products among Different Age Group of Consumers

Consumers of different age groups have been influenced by different factors to buy green products. In order to find out the significant difference in factors influencing to buy green products among different age group of consumers in Kanyakumari District, 't' test is attempted with the null hypothesis as, **"There is no significant difference in factors influencing to buy green products among different age group of consumers in Kanyakumari District"**. The result of ANOVA is presented in table 7.

Table 7: Factors influencing to Buy Green Products among different Age Group of Consumers

Factors	Age Group (Mean Score)					F Statistics
	Below 25 years	26-35 years	36-45 years	46-55 years	Above 55 years	
Price	4.0000	3.7273	3.7000	3.5192	3.3636	0.798
Health advantage	3.0000	4.3636	4.2400	3.9038	4.1818	6.253*
Incremental standard of living of former community	4.3500	4.0606	4.3200	4.0577	4.2727	2.116
Convenience	4.3000	4.0909	3.6600	3.9038	3.6364	3.372*
Labeling	4.2000	3.7273	3.2400	3.7812	3.4545	3.716*
Environmental concern	4.1000	3.7073	3.6200	4.1538	3.4554	3.443*
Life shelf of the products	4.0000	3.3939	3.1200	3.5769	4.3636	3.039*

Source: Computed data

*-Significant at five per cent level

The table 7 shows the mean score of factors influencing to buy green products among different age group of consumers along with its respective 'F' statistics. The important factors influences to buy green products among the consumers who are in the age group of below 25 years are incremental standard of living of farmer community and convenience and their respective mean scores are 4.3500 and 4.3000. The factors influencing the consumers in the age group of 26-35 years are the health advantage and convenience and their respective mean scores are 4.3636 and 4.0909. The important factors influencing to buy green products and among the consumers who are in the age group of 36-45 years are incremental standard of living of farmer community and health advantage and their

respective mean scores are 4.3200 and 4.2400, among the consumers in the age group of 46-55 years, environmental concern and incremental standard of living of farmer community and their respective mean scores are 4.1538 and 4.0577 and consumers who are in the age group of above 55 years are incremental standard of living of farmer community and their respective mean scores are 4.3636 and 4.2727. Regarding the factors influencing to buy green products, the significant difference among the different age group of consumers, are identified in the case of health advantage, convenience, labeling, environmental concern and life shelf of the products since the respective 'F' statistics are significant at 5 per cent level, the null hypothesis is rejected.

Perception towards Green Products among Different Gender Group of Consumers

Consumers of different gender group have different perception towards green products. In order to find out the significant difference in perception towards green products among different gender group of consumers in Kanyakumari District, 't' test is attempted with the null hypothesis as, "There is no significant difference in perception towards green products among different gender group of consumers in Kanyakumari District". The result of 't' test is presented in table 8.

Table 8: Perception towards Green Products among different Gender Group of Consumers

Perception	Gender (Mean Score)		T- Statistics
	Male	Female	
Green products are more expensive than conventional products	4.2105	4.3118	0.935
Price of green products is a barrier to buy	4.1228	4.0000	1.165
Green products are more ecologically sound than conventional products	3.9123	3.7204	1.281
There is a little variety of green products when compared with conventional products	4.1053	3.6882	2.332*
Green products are not easily found in grocery stores or in the hyper stores /markets	3.8596	4.1828	2.328*
Green food labels can easily be imitated	3.1228	4.2903	7.425*
Green food labels are confusing	3.5614	4.0538	2.919*
I usually read the ingredients on the labels before purchasing	4.0702	3.8817	0.985

Source: Computed data

*-Significant at five per cent level

The table 8 shows the mean score of perception towards green products among different gender group of consumers along with its respective 'T' statistics. The important perceptions towards green products among the male consumers that green products are more expensive than conventional products and there is a little variety of green products when compared with conventional products and their respective mean scores are 4.2105 and 4.1053 and among the female consumers, green products are more expensive than conventional products and green products are not easily found in grocery stores or in the hyper stores /markets and their respective mean scores are 4.3118 and 4.1828. Regarding the perception towards green products, the significant difference among the different gender group of consumers are identified in the case of there is a little variety of green products when compared with conventional products, green products are not easily found

in grocery stores or in the hyper stores /markets, green food labels can easily be imitated and green food labels are confusing since the respective ‘T’ statistics are significant at 5 per cent level, the null hypothesis is rejected.

Perception towards Green Products among Different Age Group of Consumers

Consumers of different age groups have different perception towards green products. In order to find out the significant difference in perception towards green products among different age group of consumers in Kanyakumari District, ‘t’ test is attempted with the null hypothesis as, **“There is no significant difference in perception towards green products among different age group of consumers in Kanyakumari District”**. The result of ANOVA is presented in Table 9.

Table 9: Perception towards Green Products among different Age Group of Consumers

Perception	Age Group (Mean Score)					F Statistics
	Below 25 years	26-35 years	36-45 years	46-55 years	Above 55 years	
Green products are more expensive than conventional products	4.0000	4.0909	4.2800	4.4231	4.1818	1.629
Price of green products is a barrier to buy	4.0000	4.0303	4.0200	4.0192	4.3636	0.755
Green products are more ecologically sound than conventional products	3.7500	3.5600	4.0577	3.7273	3.7973	4.612*
There is a little variety of green products when compared with conventional products	4.2500	3.6970	3.7000	4.0385	4.0000	0.873
Green products are not easily found in grocery stores or in the hyper stores /markets	4.0000	4.4200	3.6923	4.1818	4.0400	5.466*
Green food labels can easily be imitated	4.5000	3.0606	4.2400	3.7885	4.2727	9.102*
Green food labels are confusing	4.0000	3.9091	3.9200	3.6923	4.2000	0.865
I usually read the ingredients on the labels before purchasing	4.2000	3.8788	3.7000	4.1731	3.9091	2.049

Source: Computed data

*-Significant at five per cent level

The table 9 shows the mean score of perception towards green products among different age group of consumers along with its respective 'F' statistics. The important perceptions towards green products among the consumers who are in the age group of below 25 years that green food labels can easily be imitated and there is a little variety of green products when compared with conventional products and their respective mean scores are 4.5000 and 4.2500 and among the consumers in the age group of 26-35 years, green products are not easily found in grocery stores or in the hyper stores /markets and green products are more expensive than conventional products and their respective mean scores are 4.4200 and 4.0909. The important perception towards green products among the consumers who are in the age group of 36-45 years are that green products are more expensive than conventional products and green food labels can easily be imitated and their respective mean scores are 4.2800 and 4.2400, among the consumers in the age group of 46-55 years, green products are more expensive than conventional products and green products are not easily found in grocery stores or in the hyper stores /markets and their respective mean scores are 4.4231 and 4.1818 and consumers who are in the age group of above 55 years price of green products is a barrier to buy and green food labels can easily be imitated and their respective mean scores are 4.3636 and 4.2727. Regarding the perceptions towards green products, the significant difference among the different age group of consumers are identified in the case of green products being more ecologically sound than conventional products, green products being not easily found in grocery stores or in the hyper stores /markets and green food labels easily be imitated since the respective 'F' statistics are significant at 5 per cent level, the null hypothesis is rejected.

Suggestions

- To boost demand of green products in the domestic market, more emphasis should be laid on creating awareness among consumers about the health benefits and nutritional value of green products. The negative aspects of agro-chemicals should also be brought to the notice of people by preparing pamphlets, circulars, advertisements, exhibitions, green fairs, use of social media, seminars, and channel discussions, etc.
- Price and availability are perceived to be the major barriers to the consumption of green products. At present, the green products are available at a premium price. Efforts should be made to bring down the cost of green products so that its price may be able to come within the reach of common man.
- There is a need to create more trust in the production and certification process of agriculture products. Thus, informative packaging, giving appropriate information about green product and its contents and nutritional value, and proper labelling should be there to make people aware about green products, which, in turn, will increase the demand.
- There is need for marketing research for export potential of green products. There should be proper planning for marketing of green grown fruits, vegetables and food grains that should help farmers to get a better price for their produce. This, in turn, will motivate them to convert more area under green cultivation.

Conclusion

It is concluded that the important factors that influence to buy green products among the male consumers are health advantage and environmental concern. The important factors that influence to buy green products among the female consumers are incremental standard of living of farmer community and health advantage. Buying of green products is

increasing because of environmental and health issues associated with food production. The increase in consumers' interest in green products has been attributed among other issues to the growing demand for food free from pesticides and chemical residues. With the present study an attempt is made to describe the consumer perception towards green products. The main motives to purchase green products are health and environmental benefits, plus support for local or small farmers. In addition, an important factor that was revealed as a barrier to the development of green foods is consumer information. Increased consumer awareness of green labeling and their trust in green labels as well as increasing the availability and range of green food products, may be the most effective way of increasing their market share.

References

- Chandrashekar, H.M., "Consumers Perception towards Green Products - A Study in Mysore City", International Journal of Research in Business Studies and Management, Vol.1, Issue.1, November 2014.
- Mohanasoundari, T and Kalaivani, A., "A Study on Consumers Preference Towards Green Products- in Tirupur District", JSR - International Journal of Scientific Research, Vol.5, No.3, 2016.
- Sathyendra Kumar AD et.al., "A Study on Consumers Behavior towards Green Food Products in Mysore City", International Journal of Management Research & Review, Vol.5, Issue.11, 2015.

Analytical Study of Data Warehouse

Raj Sinha*

Abstract

A data warehouse is a system that stores data from a company's operational databases as well as external sources. Data warehouse platforms are different from operational databases because they store historical information, making it easier for business leaders to analyze data over a specific period of time. Data warehouse platforms also sort data based on different subject matter, such as customers, products or business activities. First, we determined the business objectives for the system. Then we collected and analyzed information about the enterprise. We identified the core business processes that the company needed to track, and constructed a conceptual model of the data. Then we located the data sources and planned data transformations. Finally, we set the tracking duration.

Keywords: *Company, Information, Storage, Business, Data.*

Introduction

Data Warehouse is centralized data repositories storage for analytical and reporting purposes. According to Ralph Kimball, "Data warehouse is the conglomerate of all data marts within the enterprise. Information is always stored in the dimensional model". The term "Data Warehouse" was first coined by Bill Inmon in 1990. According to Inmon, a data warehouse is a subject oriented, integrated, time-variant, and non-volatile collection of data. This data helps analysts to take informed decisions in an organization.

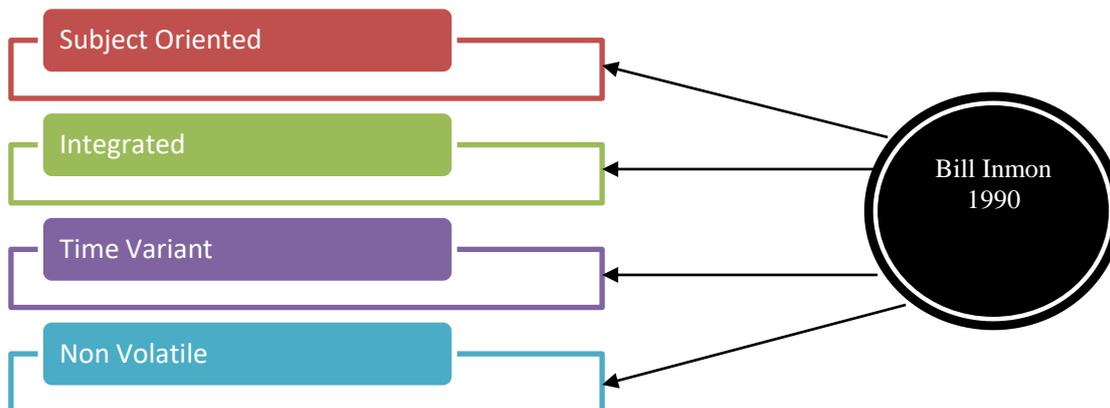


Fig: 1.0 Bill Inmon definition of data warehouse

A common way of introducing data warehousing is to refer to the characteristics of a data warehouse as set forth by William Inmon:

- ✓ Subject oriented
- ✓ Integrated
- ✓ Non Volatile
- ✓ Time Variant

* Guest Faculty (MCA, MBA) LNMIEDSC, Patna

Subject Oriented: It provides information around a subject rather than the organization's ongoing operations. In simple words, data warehouse concentrates on a particular subject area. For example: let's us take the example of sales company.

- Operational System: Details (Sales Receipt, Contract, Delivery)
- Subject area: Sales

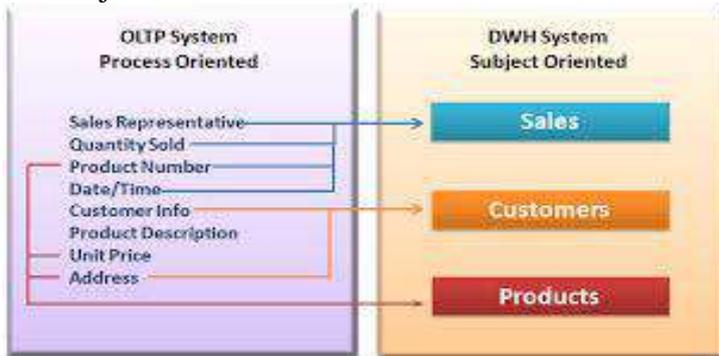


Fig: 1.1 Subject Oriented

Integrated: It consists of data that has been combined from numerous sources.

- Obtain data: mainframes (Product Info), flat files (Contract Info), SQL Server database (Sales Details), etc
- Combine: Data warehouse (Mainframes (Product Info) + flat files (Contract Info) +SQL Server database (Sales Details))

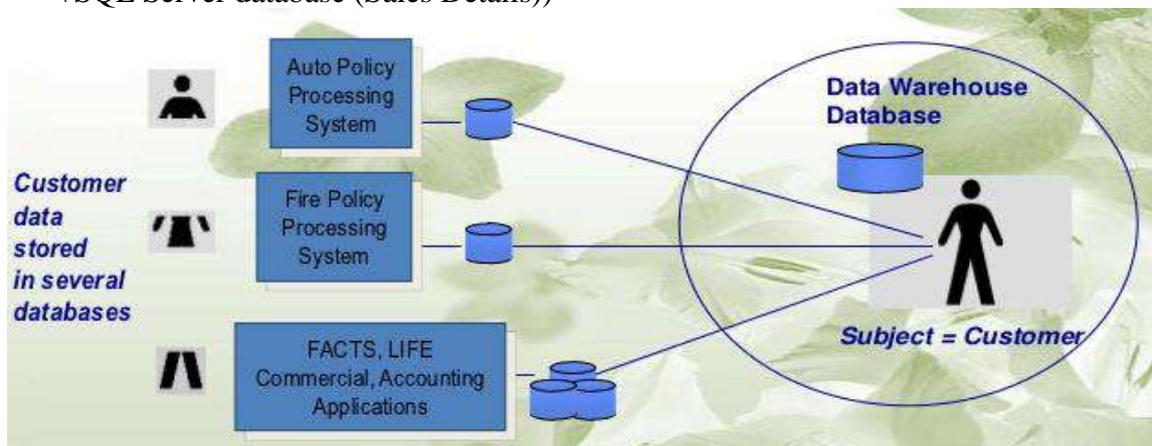


Fig: 1.2 Integrated

Time Variant: All data in the data warehouse is identified with a particular time period. Historical data is kept in a data warehouse. For example, one can retrieve data from 3 months, 6 months, 12 months, or even older data from a data warehouse. This contrasts with a transactions system, where often only the most recent data is kept. For example, a transaction system may hold the most recent address of a customer, where a data warehouse can hold all addresses associated with a customer.

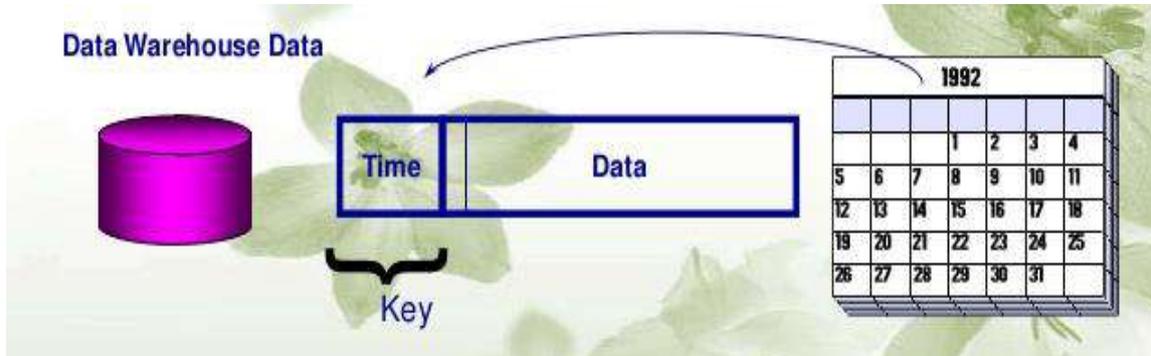


Fig. 1.3 Time Variant

Non-volatile: It means that, once entered into the data warehouse, data should not change. A different version of data is stored in the data warehouse indicating if any insert, update or delete have occurred in the database. Hence, the original data is never altered. In short, Data is stable in a data warehouse.

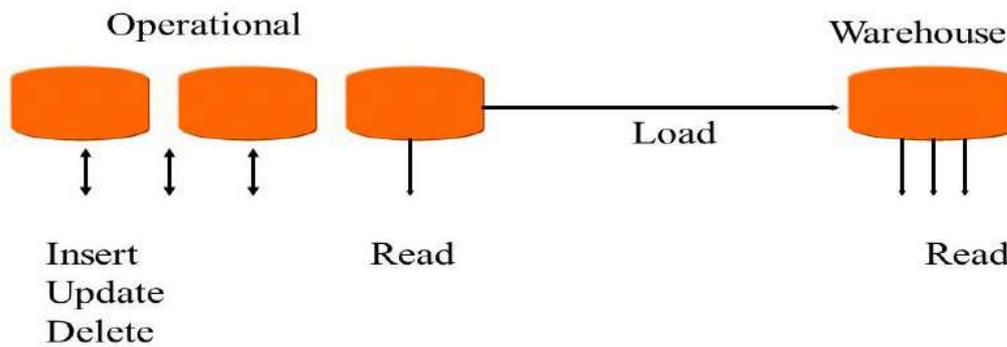


Fig. 1.4 Non Volatile

Difference between Bill Inmon and Ralph Kimball

Ralph Kimball provided a more concise definition of a data warehouse: “A data warehouse is a copy of transaction data specifically structured for query and analysis.” This is a functional view of a data warehouse.

Kimball did not address how the data warehouse is built like Inmon did; rather he focused on the functionality of a data warehouse.

REQUIREMENTS	INMON	KIMBALL
Data Stability	Source systems changes frequently	Stable source systems
Staff requirement	Large	Small
Delivery	Slow and Long	Quick turnaround
Cost	Low upfront cost	High expenditure

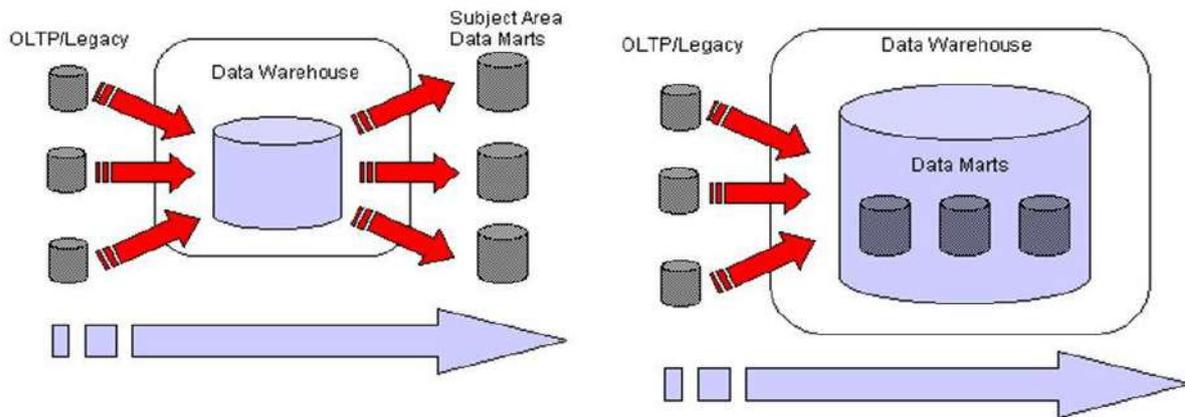


Fig: 1.5 Inmon vs Kimball

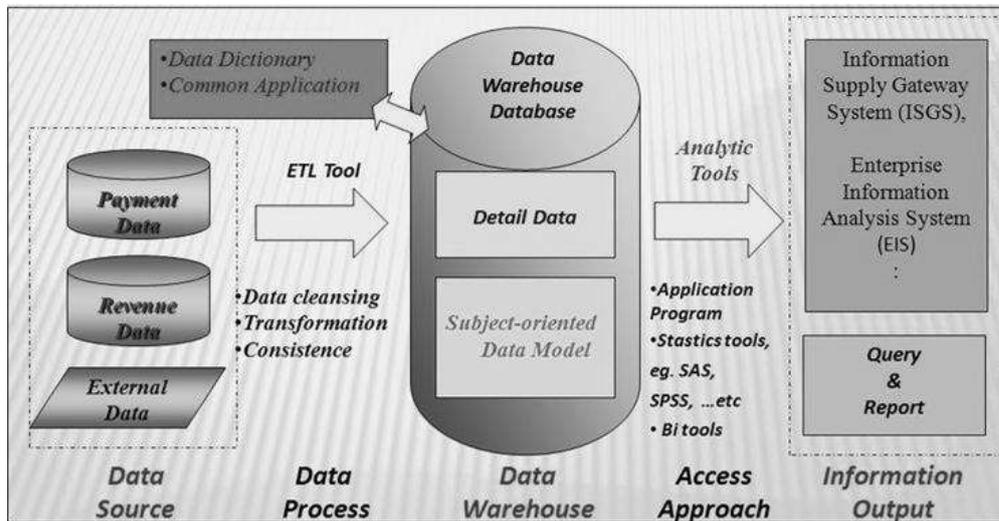
Data warehouse system is also known by the following name:

- Decision Support System (DSS)
- Executive Information System
- Management Information System
- Business Intelligence Solution
- Analytic Application
- Data Warehouse



Fig: 1.6 Other Names of data warehouse

In the Airline system, it is used for operation purpose like crew assignment, analyses of route profitability, frequent flyer program promotions, etc. It is widely used in the banking sector to manage the resources available on desk effectively. Few banks also used for the market research, performance analysis of the product and operations. Healthcare sector also used Data warehouse to strategize and predict outcomes, generate patient's treatment reports, share data with tie-in insurance companies, medical aid services, etc.



Objectives

- Reconcile different views of the same data
- Provide a consolidated picture of enterprise data
- Create a virtual “one-stop-shopping” data environment
- Improve quality of data
- Minimize inconsistent reports
- Capture and provide access to metadata
- Provide capability for data sharing
- Integrate data from multiple sources
- Merge historical data with current data

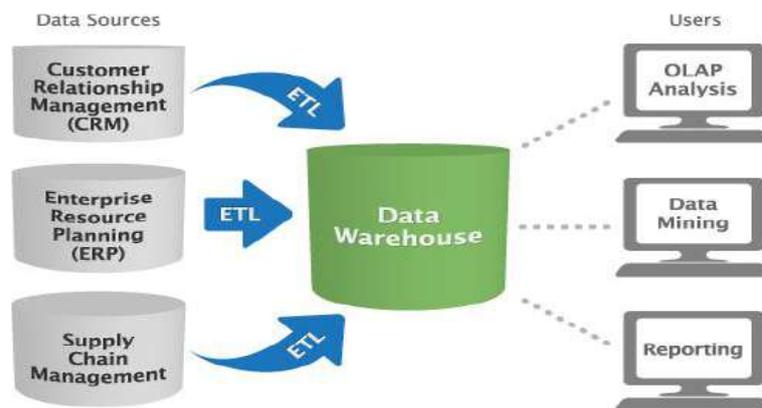


Fig: 1.7 Objectives of data warehouse

Characteristics: The key characteristics of a data warehouse are as follows:

- Some data is denormalized for simplification and to improve performance
- Large amounts of historical data are used
- Queries often retrieve large amounts of data
- Both planned and ad hoc queries are common
- The data load is controlled

NOTE: In general, fast query performance with high data throughput is the key to a successful data warehouse.

Need of data warehouse

- Ensure consistency.
- Make better business decisions.
- Improve organization bottom line with the decrease costs, maximize efficiency and increase sales.
- 40-60% reduction in time to analyze data
- 100% confidence in your data
- Higher quality insights
- Better data security

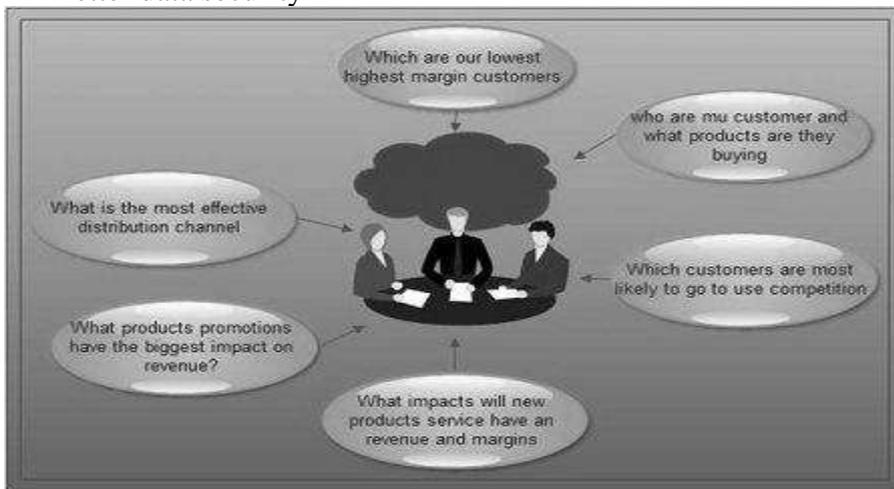


Fig: 1.8 Need of data warehouse

Types of data warehouse: Three main types of Data Warehouses are:

- Enterprise Data Warehouse
- Operational Data Store
- Data Mart

Data warehouse architecture: There are mainly 3 types of architecture:

- Single-tier architecture
- Two-tier architecture
- Three-tier architecture

Single-tier architecture: The objective of a single layer is to minimize the amount of data stored. This goal is to remove data redundancy. This architecture is not frequently used in practice.

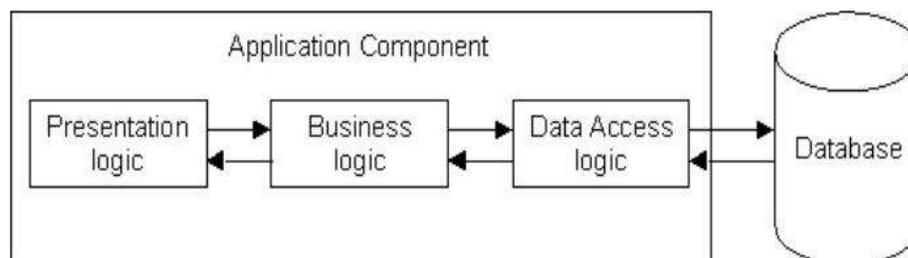


Fig: 1.9 Single tier architecture

Two-tier architecture: Two-layer architecture separates physically available sources and data warehouse. This architecture is not expandable and also not supporting a large number of end-users. It also has connectivity problems because of network limitations.

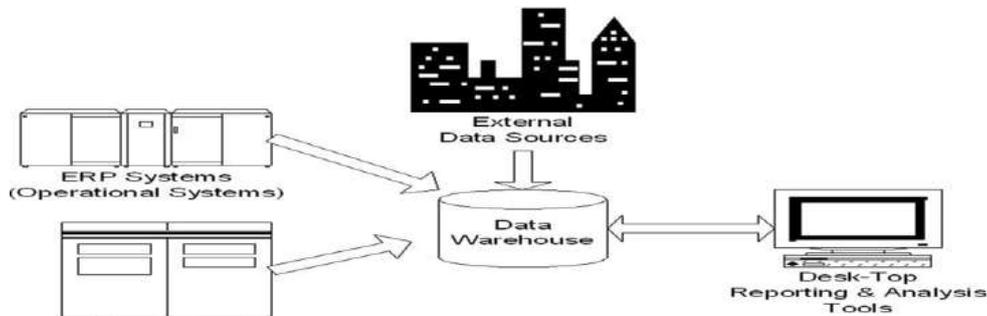


Fig. 1.10 Two-Tier architecture

Three-tier architecture: This is the most widely used architecture. It consists of the Top, Middle and Bottom Tier.

- Bottom Tier: The bottom tier of the architecture is the data warehouse database server. These back end tools and utilities perform the Extract, Clean, Load, and refresh functions.
- Middle Tier: The middle tier in Data warehouse is an OLAP server which is implemented using either ROLAP or MOLAP model. For a user, this application tier presents an abstracted view of the database. This layer also acts as a mediator between the end-user and the database.
- Top-Tier: The top tier is a front-end client layer. Top tier is the tools and API that you connect and get data out from the data warehouse. It could be Query tools, reporting tools, managed query tools, Analysis tools and Data mining tools.

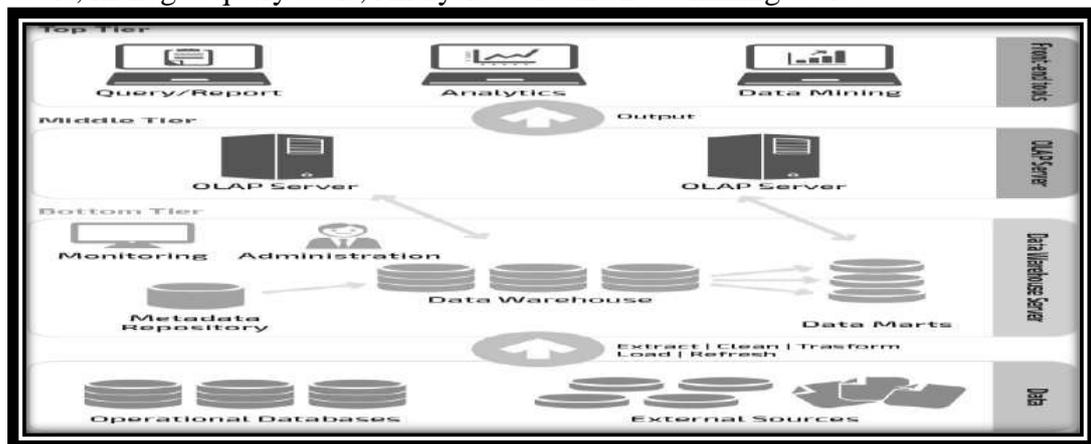


Fig. 1.11 Three-tier data warehouse

Components of a data warehouse: There are mainly five components of Data Warehouse:

- Data Warehouse Database
- Sourcing, Acquisition, Clean-up and Transformation Tools (ETL)
- Metadata
- Query Tools
- Data warehouse Bus Architecture

Data Warehouse Database: The central database is the foundation of the data warehousing environment. This database is implemented on the RDBMS technology.

Although, this kind of implementation is constrained by the fact that traditional RDBMS system is optimized for transactional database processing and not for data warehousing. For instance, ad-hoc query, multi-table joins; aggregates are resource intensive and slow down performance.

Hence, alternative approaches to Database are used as listed below-

- In a data warehouse, relational databases are deployed in parallel to allow for scalability. Parallel relational databases also allow shared memory or shared nothing model on various multiprocessor configurations or massively parallel processors.
- New index structures are used to bypass relational table scan and improve speed.
- Use of multidimensional database (MDDBs) to overcome any limitations which are placed because of the relational data model. Example: Essbase from Oracle.

Sourcing, Acquisition, Clean-up and Transformation Tools (ETL): They are also called Extract, Transform and Load (ETL) Tools. An ETL tool extracts the data from different RDBMS source systems, transforms the data like applying calculations, concatenate, etc. and then load the data to Data Warehouse system. The data is loaded in the DW system in the form of dimension and fact tables. These ETL Tools have to deal with challenges of Database & Data heterogeneity.



Fig: 1.12 Extract, Transform and Load Process

Metadata: Metadata is data about data which defines the data warehouse. It is used for building, maintaining and managing the data warehouse. For example, the index of a book serves as a metadata for the contents in the book. They can be classified into following categories:

- Technical Metadata: Basically used by Data warehouse designers and administrators.
- Business Metadata: It contains detail to understand information stored in the data warehouse.

Query Tools: Query tools allow users to interact with the data warehouse system in order to provide information to businesses to make strategic decisions. This is the primary objects of data warehousing.

These tools fall into four different categories:

- Query and reporting tools
- Application Development tools
- Data mining tools
- OLAP tools

Query and reporting tools: They are further divided into:

Reporting tools: They are further divided into:

- Production reporting tools: allows organizations to generate regular operational reports. It also supports high volume batch jobs like printing and calculating. Some popular

reporting tools are Brio, Business Objects, Oracle, PowerSoft, SAS Institute. Desktop report writer: designed for end-users for their analysis

- Managed query tools: This kind of access tools helps end users to resolve snags in database and SQL and database structure by inserting meta-layer between users and database.

Application Development tools: Sometimes built-in graphical and analytical tools do not satisfy the analytical needs of an organization. In such cases, custom reports are developed using Application development tools.

Data mining tools: Data mining is a process of discovering meaningful new correlation, patterns, and trends by mining large amount data. Data mining tools are used to make this process automatic.

OLAP tools: These tools are based on concepts of a multidimensional database. It allows users to analyze the data using elaborate and complex multidimensional views.

Data warehouse Bus Architecture: Data warehouse Bus determines the flow of data in your warehouse. The data flow in a data warehouse can be categorized as Inflow, up flow, down flow, Outflow and Meta flow.

General stages of data warehouse

Step 1: Determine Business Objectives

Step 2: Collect and Analyze Information

Step 3: Identify Core Business Processes

Step 4: Construct a Conceptual Data Model

Step 5: Locate Data Sources and Plan Data Transformations

Step 6: Set Tracking Duration

Step 7: Implement the Plan

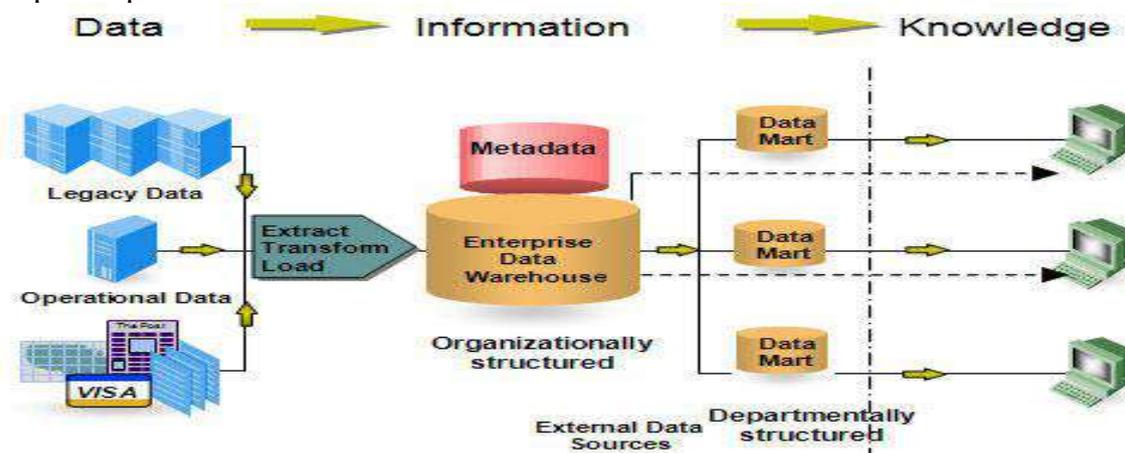


Fig: 1.13 General Stages of Data warehouse

Application of data warehouse

- Financial services
- Banking services
- Consumer goods
- Retail sectors
- Controlled manufacturing

Implementation of data warehouse: Basic data warehouse implementation phases are:

- Current situation analysis

- Selecting data interesting for analysis, out of existing database
- Filtering and reducing data
- Extracting data into staging database
- Selecting fact table, dimensional tables and appropriate schemes
- Selecting measurements, percentages of aggregations and warehouse methods
- Creating and using the cube

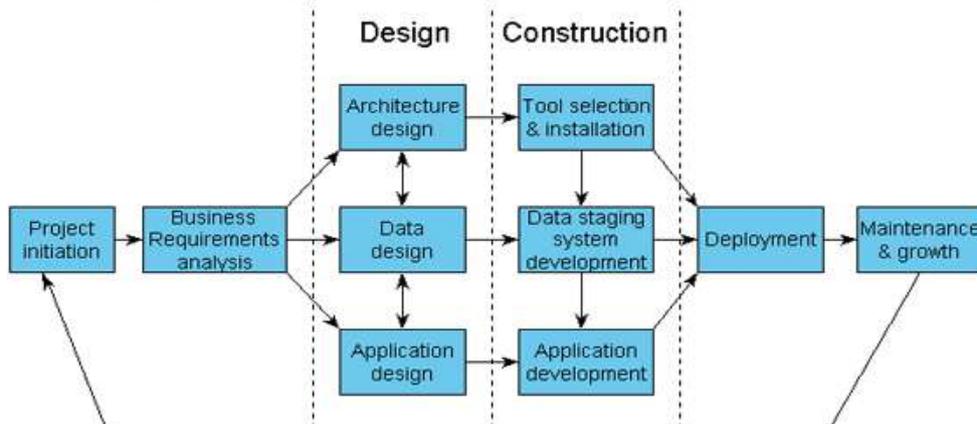


Fig: 1.15 Implementation of data warehouse

Trends of data warehouse: Oracle, a well-known player in the market, in 2014 identified the top 10 trends in data warehousing which are as follows:

- The “datafication” of the enterprise spawns more-capable data warehouses.
- Physical and logical consolidation reduces costs.
- Hadoop optimizes data warehousing environments by accelerating data transformation.
- Customer experience (CX) strategies gain real-time insight to improve marketing campaigns.
- Engineered systems become the de facto standard for large-scale information management activities.
- On-demand sandbox analytics environments meet rising demand for rapid prototyping and information discovery.
- Data compression enables high-value analytics.
- In-database analytics simplifies data-driven analysis.
- In-memory technologies supercharge data warehouse performance.
- Data warehouses become more critical to business operations.

Data warehouse tools: Some most prominent one are:

- MarkLogic
- Oracle
- Amazon RedShift

Advantages of data warehouse

- Integrating data from multiple sources;
- Performing new types of analyses; and
- Reducing cost to access historical data.
- Ensures Data Quality and Consistency
- Saves Time and Money
- Tracks Historically Intelligent Data

- Generates high Return On Investment
- Better enterprise intelligence.
- More cost-effective decision-making
- Competitive advantage

Disadvantages of data warehouse

- Costly to maintain
- Underestimation of resources of data loading
- Hidden problems with source systems
- Required data not captured
- Increased end-user demands
- Data homogenization
- High demand for resources
- Data ownership
- High maintenance
- Long-duration projects
- Complexity of integration

Conclusion

A data warehouse is “a relational database that is designed for query and analysis rather than for transaction processing. It usually contains historical data derived from transaction data, but it can include data from other sources. It separates analysis workload from transaction workload and enables an organization to consolidate data from several sources”. Data warehouse allows business users to quickly access critical data from some sources all in one place. Being a subject-oriented, integrated, time-variant and volatile, data warehousing caters several advantages to enterprises and users when implemented for business purposes. The successful application of DWH delivers great results and improves the overall functioning of every organization.

References

1. Barry, D., Data Warehouse from Architecture to Implementation, Addison-Wesley, 1997.Hall, 2000.
2. <http://www.informit.com/store/database>
3. <https://www.glowtouch.com/the-benefits-of-data-warehousing-and-etl/>
4. Joe Caserta and Ralph Kimball,,” The Data Warehouse ETL Toolkit: Practical Techniques for Extracting, Cleaning, Conforming, and Delivering Data”
5. Kachur, R. J. The Data Warehouse Management Handbook. Upper Saddle River, N.J.: Prentice
6. Suknović, M. (2016). Data warehousing and data mining- A case study. Yugoslav Journal of operations Research, 15(1).
7. MattéoGolfarelli and Stefano Rizzi,,” Data Warehouse Design: Modern Principles and Methodologies”.Organizational Sciences, Belgrade, 2003.
8. Ponniah, P. (2004). Data warehousing fundamentals: a comprehensive guide for IT professionals. John Wiley & Sons.
9. Anahory, S., & Murray, D. (1997). Data warehousing in the real world: a practical guide for building decision support systems. Harlow, UK: Addison-Wesley.

Innovative Approaches (CAS) in Teaching of Mathematics at Higher Secondary Level

Amitava Jana*

Abstract

The computer algebra systems (CAS) such as Sage math, Mathematica, Maple, Mat lab, MathCAD, Maxima have potential to facilitate an active approach to learning, to allow students to become involved in discovery and to consolidate their own knowledge, thus developing conceptual and geometrical understanding and a deeper approach to learning. Emergence of such mathematical tools and its ability to deal with most of the mathematics topics is very significant. The main idea of this paper is to visualize various topics on mathematics with the help of CAS under graduate level.

We believe that mathematics teaching can be made much more interesting, inventive and exploratory using CAS. We include a small module (curve plotting) developed using Mathematica to support our claim. The role of teachers is very important in order to make the effective use of available mathematical tools.

Introduction

Computer algebra systems (CAS) allow us to perform symbolic computation with computer. It not only facilitates complicated calculations but can also be used as a powerful tool for teaching and learning mathematics. It can be used by the teachers in the classroom for hands on experiment as well as by the students to visualize mathematical results and get a realistic view of abstract concepts in mathematics.

In this short exposition, I have used it to visualize certain mathematical results, which not only give us delight and help learning; it generates new insights in exploring the wonderful mathematical world. With some specific numerical examples, I have shown how this approach can enlighten us with new way of looking at some standard mathematical facts and can be utilized for teaching mathematics at different levels and complexity.

Historical Perspective

Computer algebra systems began to appear in the early 1970, and devolved out of research into artificial intelligence. Pioneering work was conducted by the Nobel laureate Martin Veltman, who designed a program for symbolic mathematics, especially High Energy Physics in 1963. The first popular systems were Reduce, Derive, and Maxima which are still commercially available. A free version of Macsyma called Maxima is actively being maintained. The current market leaders are Maple, Mathematica, MatLab, SciLab and MuPAD. These are commonly used by mathematicians, scientists, and engineers. Some computer algebra systems focus on a specific area of application; these are typically developed in academia and are free. Here is a list of some of the most popular free and commercial mathematical software. More information on these can be found on their respective websites.

software	Year of Start	Utility
Mathematica*	1998	General purpose CAS
Maple*	1985	General purpose CAS

* Research Scholar, Acharya Nagarjuna University

MuPAD*	1993	General purpose CAS
MatLab*	1970	General purpose CAS
MathCAD*	1985	General purpose CAS
Magma*	1993	Arithmetic Geometry, Number Theory
SciLab	1994	General purpose CAS
Maxima	1998	General purpose CAS
SAGE	2005	Algebra and Geometry Experimentation

CAS In Teaching of Mathematics

A Computer Algebra system is a type of software package that is used in manipulation of mathematical formulae. The primary goal of a Computer Algebra system is to automate tedious and sometimes difficult algebraic manipulation tasks. The principal difference between a Computer Algebra system and a traditional calculator is the ability to deal with equations symbolically rather than numerically. The specific uses and capabilities of these systems vary greatly from one system to another, yet the purpose remains the same: manipulation of symbolic equations. Computer Algebra systems often include facilities for graphing equations and provide a programming language for the user to define his/her own procedures.

Computer Algebra systems have not only changed how mathematics is taught at many institutions, but have provided a flexible tool for mathematicians worldwide. Examples of popular systems include Maple, Mathematica, and MathCAD. Computer Algebra systems can be used to simplify rational functions, factor polynomials, find the solutions to a system of equation, and various other manipulations. In Calculus, they can be used to find the limit of a function, maxima minima of a problem, inequality problem, finding real roots of polynomial and differentiate arbitrary equations.

For Limit of a Function

Find the limit

$$\lim_{x \rightarrow 0} \frac{\sin x}{x}$$

Analytical method

$$\sin x < x < \tan x.$$

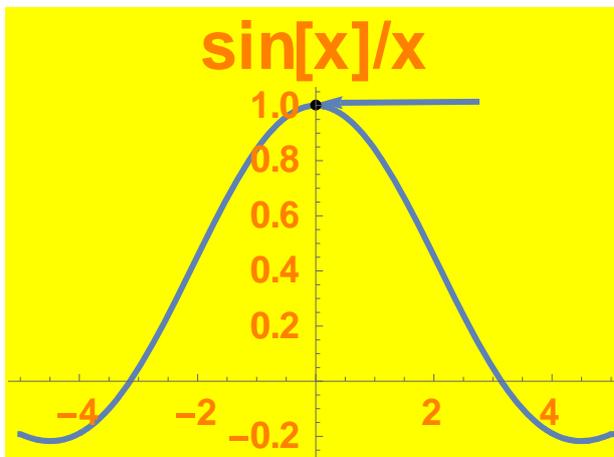
$$\therefore \frac{\sin x}{\sin x} < \frac{x}{\sin x} < \frac{\tan x}{\sin x}$$

$$\therefore 1 < \frac{x}{\sin x} < \frac{\sin x}{\cos x \sin x} = \frac{1}{\cos x}$$

$$\lim_{x \rightarrow 0} \frac{1}{\cos x} = 1$$

$$\therefore \lim_{x \rightarrow 0} \frac{x}{\sin x} = 1$$

$$\therefore \lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$



By plotting the curve of the function we can easily visualize the limit, $x \rightarrow 0$

Find the limit

$$\lim_{x \rightarrow 0} \frac{3^x - 1}{(4+x)^{1/2} - 2}$$

By Analytical method

$$\text{Let, } I = \lim_{x \rightarrow 0} \frac{3^x - 1}{(4+x)^{1/2} - 2}$$

$$\text{or, } I = \frac{\lim_{x \rightarrow 0} \frac{3^x - 1}{x}}{\lim_{x \rightarrow 0} \frac{(4+x)^{1/2} - 2}{x}} \quad [\text{since, } x \rightarrow 0, \therefore x \neq 0]$$

$$\text{Now, } \lim_{x \rightarrow 0} \frac{3^x - 1}{x} = \log 3 \quad [\text{since, } \lim_{x \rightarrow 0} \frac{a^x - 1}{x} = \log a]$$

And,

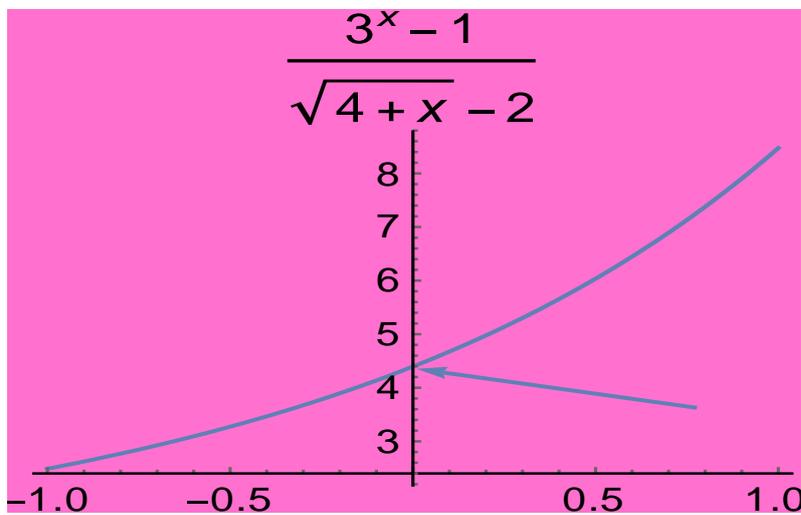
$$\lim_{x \rightarrow 0} \frac{\sqrt{4+x} - 2}{x} = \lim_{x \rightarrow 0} \frac{(\sqrt{4+x} - 2)(\sqrt{4+x} + 2)}{x(\sqrt{4+x} + 2)} = \lim_{x \rightarrow 0} \frac{4+x-4}{x(\sqrt{4+x} + 2)}$$

$$= \lim_{x \rightarrow 0} \frac{x}{x(\sqrt{4+x} + 2)} = \lim_{x \rightarrow 0} \frac{1}{(\sqrt{4+x} + 2)}$$

$$= \frac{1}{(\sqrt{4+0} + 2)} = \frac{1}{(2+2)} = \frac{1}{4}$$

$$\text{Hence, } I = \frac{\log 3}{\frac{1}{4}} = 4 \log 3 = 4.39445$$

By plotting the curve of the function we can easily visualize the limit, $x \rightarrow 0$



Find the limit

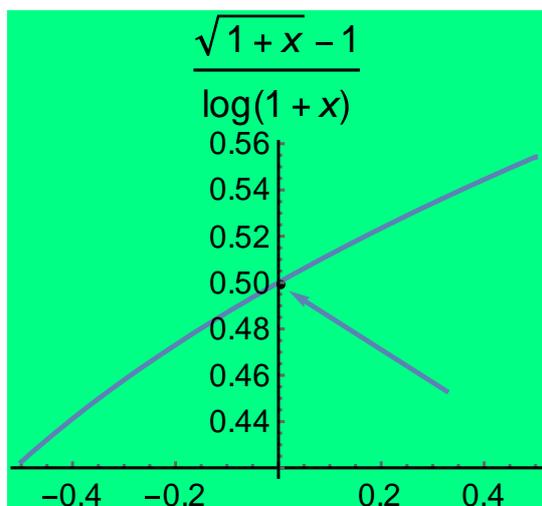
- $\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - 1}{\log(1+x)}$

By Analytical method

As x approaches 0, both the numerator and denominator approach 0 and we have the $0 / 0$ indeterminate form. Hence, by the L'hospital theorem is used to calculate the above limit as follows

$$\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - 1}{\log(1+x)} \left(\frac{0}{0} \right) = \lim_{x \rightarrow 0} \frac{\frac{1}{2} \frac{1}{(1+x)}}{\frac{1}{(1+x)}} = \frac{1}{2}$$

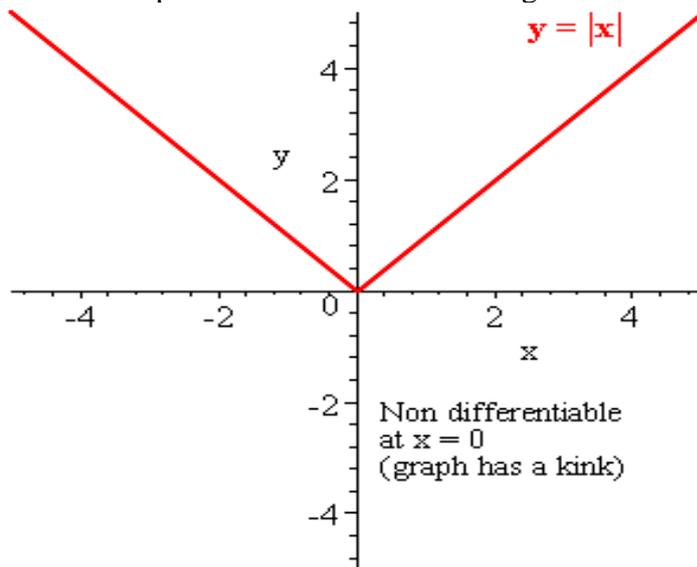
By plotting the curve of the function we can easily visualize the limit, $x \rightarrow 0$



For Non Differentiable Of A Function

• $y = |x|$

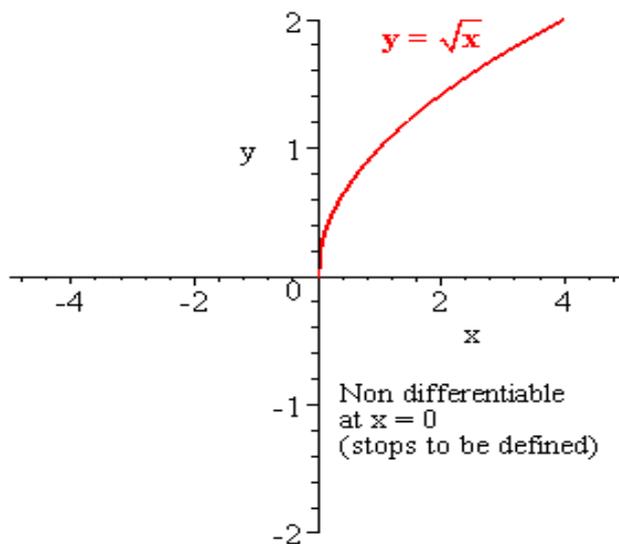
The function's graph has a kink, like the letter V has. The absolute value function, which is x when x is positive and $-x$ when x is negative has a kink at $x = 0$.



By plotting the curve of the function we can easily visualize $y = |x|$ is non differentiable at $x=0$

• $y = \sqrt{x}$

The function can't be defined at argument x . When we are talking about real functions the square root cannot be defined for negative x arguments.

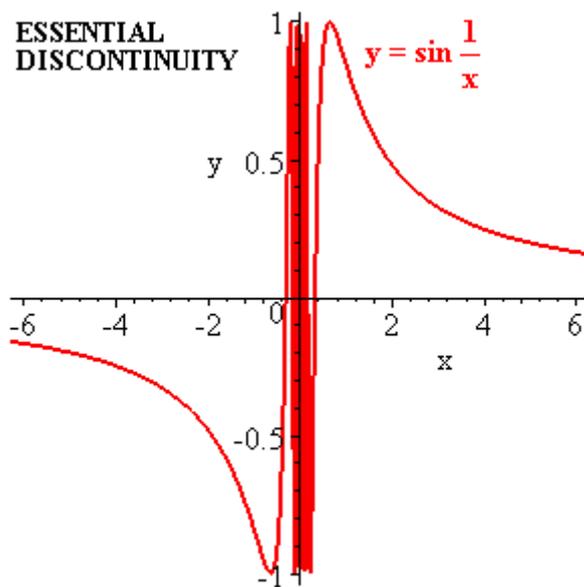


By plotting the curve of the function we can easily visualize $y = \sqrt{x}$ is non differentiable at $x=0$.

- $y = \sin \frac{1}{x}$

The function can be defined and nice, but it can wiggle so much as to have no derivative.

Try to differentiate $\sin \frac{1}{x}$ at $x = 0$.



By plotting the curve of the function we can easily visualize $y = \sin \frac{1}{x}$ is non differentiable at $x=0$.

For Visualization of Inequality

- If n is a positive integer, then $\left(1 + \frac{1}{1+n}\right)^{n+1} > \left(1 + \frac{1}{n}\right)^n$

Let us consider $n+1$ positive numbers $1+1/n, 1+1/n, \dots, 1+1/n$ (n times) and 1 . Applying A.M.>G.M., we have

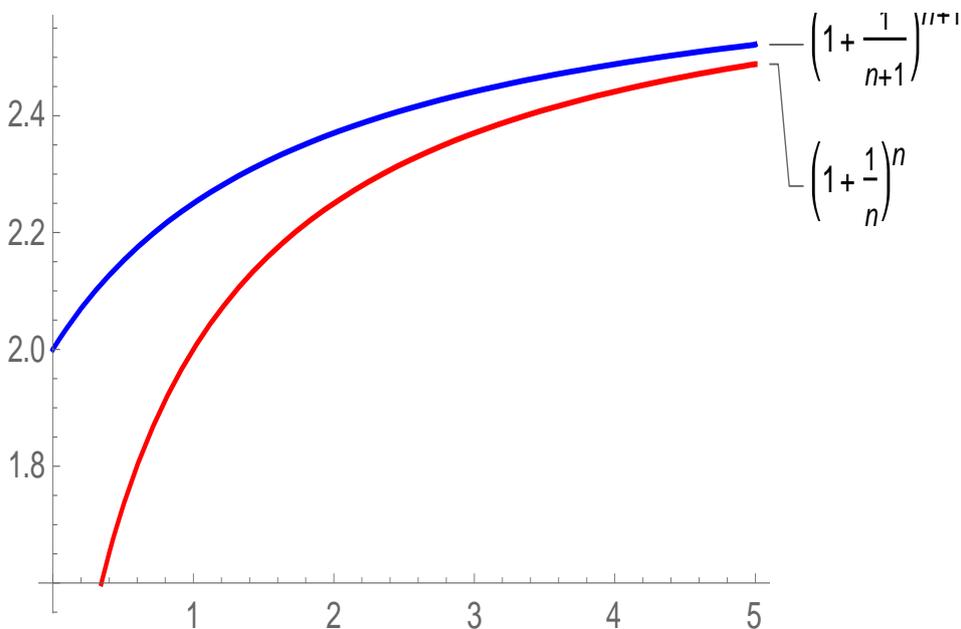
$$\frac{n \cdot \left(1 + \frac{1}{n}\right) + 1}{n+1} > \left(1 + \frac{1}{n}\right)^{\frac{n}{n+1}}$$

$$\text{or, } \left(\frac{n+2}{n+1}\right)^{n+1} > \left(1 + \frac{1}{n}\right)^n$$

$$\text{or, } \left(1 + \frac{1}{1+n}\right)^{n+1} > \left(1 + \frac{1}{n}\right)^n$$

By plotting the curve of two functions we can easily visualize

$$\left(1 + \frac{1}{1+n}\right)^{n+1} > \left(1 + \frac{1}{n}\right)^n$$



— $\left(1 + \frac{1}{n+1}\right)^{n+1}$

— $\left(1 + \frac{1}{n}\right)^n$

- If n is a positive integer >1, then $\left(\frac{n+1}{2}\right)^n > n!$

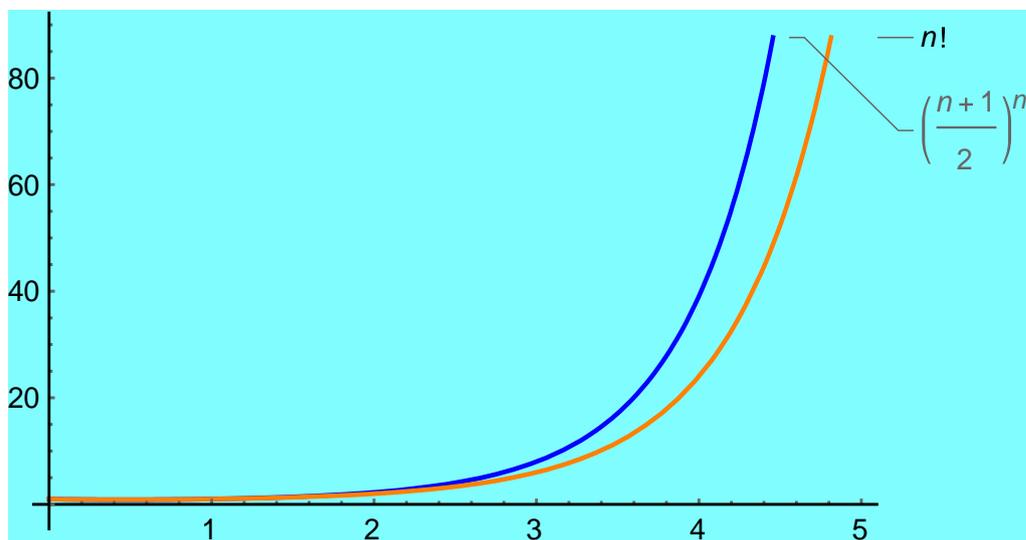
Let 1, 2, 3 ...n be n positive real numbers and applying A.M.>G.M., we have

$$\frac{1 + 2 + 3 + \dots + n}{n} > (1.2.3\dots n)^{\frac{1}{n}}$$

$$\frac{n(n+1)}{2n} > (n!)^{\frac{1}{n}}$$

$$\left(\frac{n+1}{2}\right)^n > n!$$

By plotting the curve of two functions we can easily visualize $\left(\frac{n+1}{2}\right)^n > n!$



— $\left(\frac{n+1}{2}\right)^n$

— $n!$

- If n is a positive integer, then $\left(1 - \frac{1}{1+n}\right)^{n+1} > \left(1 - \frac{1}{n}\right)^n$

Let us consider n+1 positive numbers $1-1/n, 1-1/n, \dots, 1-1/n$ (n times) and 1. Applying A.M.>G.M., we have

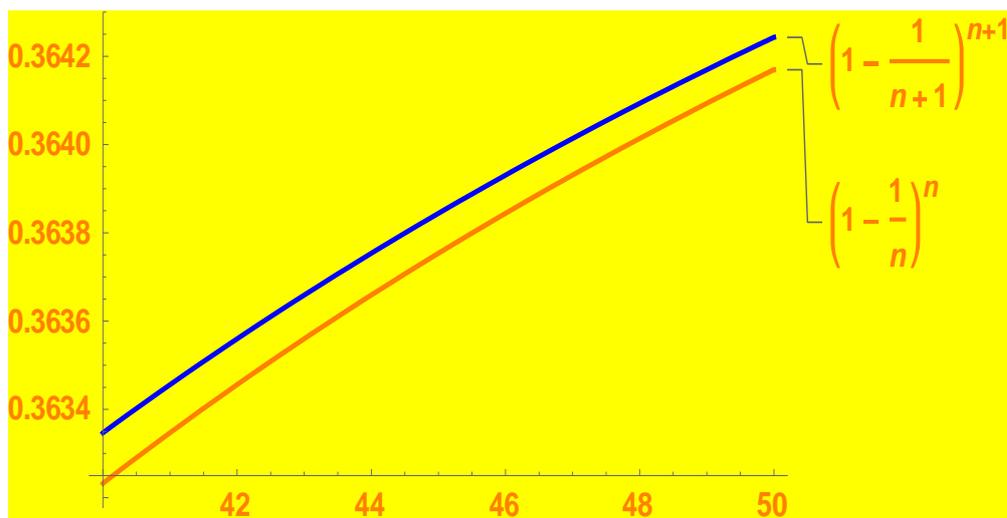
$$\frac{n \cdot \left(1 - \frac{1}{n}\right) + 1}{n + 1} > \left(1 - \frac{1}{n}\right)^{\frac{n}{n+1}}$$

$$\text{or, } \left(\frac{n}{n+1}\right)^{n+1} > \left(1 - \frac{1}{n}\right)^n$$

$$\text{or, } \left(\frac{n+1-1}{n+1}\right)^{n+1} > \left(1 - \frac{1}{n}\right)^n$$

$$\text{or, } \left(1 - \frac{1}{1+n}\right)^{n+1} > \left(1 - \frac{1}{n}\right)^n$$

By plotting the curve of two functions we can easily visualize $\left(1 - \frac{1}{1+n}\right)^{n+1} > \left(1 - \frac{1}{n}\right)^n$



— $\left(1 - \frac{1}{n+1}\right)^{n+1}$

— $\left(1 - \frac{1}{n}\right)^n$

For Visualization of Maxima & Minima of a Function

- For what value of x will $f(x) = -x^2 - 4x + 3$ have its maximum?

By Analytical method

Let, $y = -x^2 - 4x + 3$

Then, $\frac{dy}{dx} = -2x - 4$

and, $\frac{d^2y}{dx^2} = -2$

For maximum or minimum value of y we have,

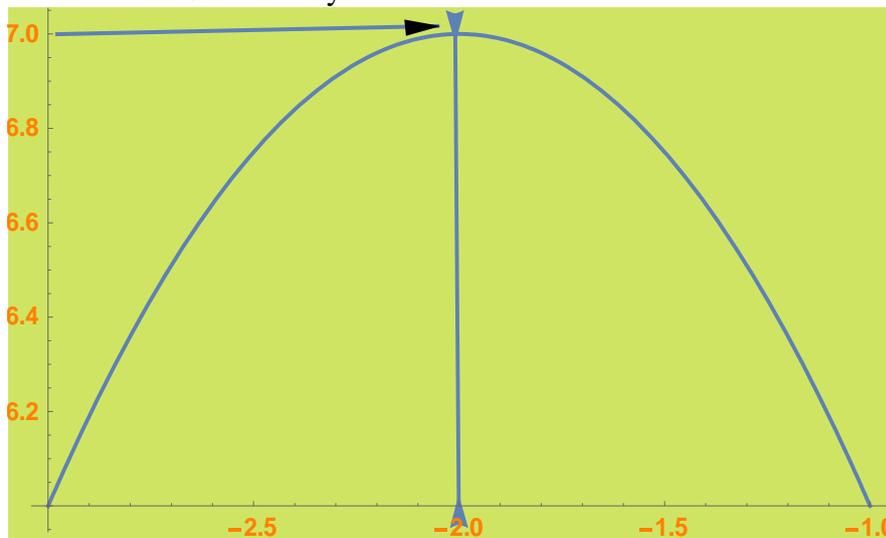
$\frac{dy}{dx} = 0$ or, $-2x-4=0$ or, $x=-2$

Now, $\left[\frac{d^2y}{dx^2} \right]_{-2} = -2$, which is negative,

Hence, $y = -x^2 - 4x + 3$ will have its maximum value at $x = -2$.

The maximum value is, $y = f(x) = -(-2)^2 - 4*(-2) + 3 = 7$

By plotting the curve of the function, $y = -x^2 - 4x + 3$, we can easily visualize maximum value at $x = -2$ & value is $y = 7$.



- For what value of x will $f(x) = x^2 + 4x + 3$ have its minimum?

By Analytical method

Let, $y = x^2 + 4x + 3$

Then, $\frac{dy}{dx} = 2x + 4$

And, $\frac{d^2y}{dx^2} = 2$

For maximum or minimum value of y we have,

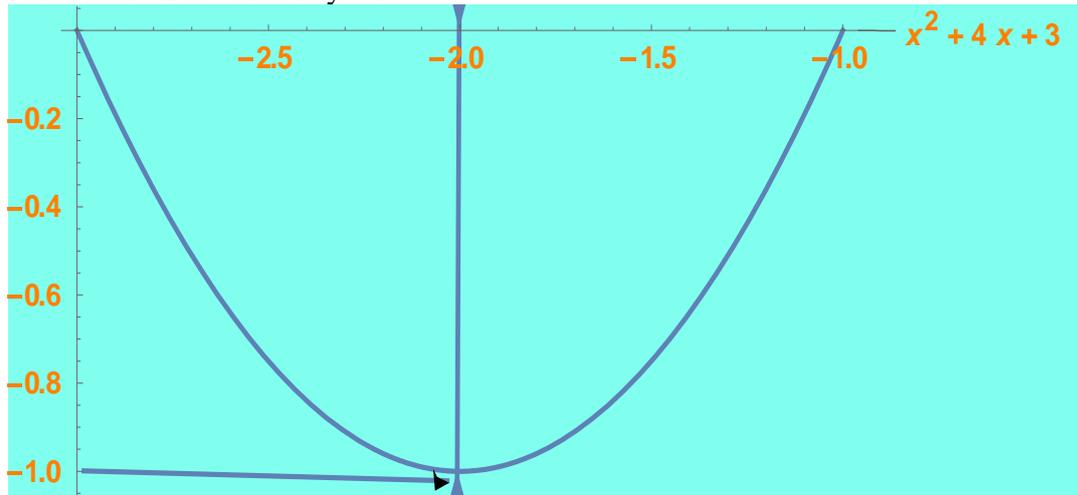
$\frac{dy}{dx} = 0$ Or, $2x + 4 = 0$ or, $x = -2$

Now, $\left[\frac{d^2 y}{dx^2} \right]_{-2} = 2$, which is positive.

Hence, $y = x^2 + 4x + 3$ will have its minimum value at $x = -2$.

The minimum value is, $y = f(x) = (-2)^2 + 4(-2) + 3 = -1$

By plotting the curve of the function, $y = x^2 + 4x + 3$, we can easily visualize the minimum value at $x = -2$ & value is $y = -1$.



• For what value of x will $f(x) = x^{\frac{1}{x}}$ have its maximum?
By analytical method

$$\text{Let, } y = x^{\frac{1}{x}}; \therefore \log y = \log x^{\frac{1}{x}} = \frac{1}{x} \log x$$

$$\text{Then, } \frac{1}{y} \frac{dy}{dx} = \frac{x \cdot \frac{1}{x} - \log x}{x^2} = \frac{1 - \log x}{x^2}$$

$$\text{or, } \frac{dy}{dx} = y \cdot \frac{1 - \log x}{x^2}$$

$$\text{and, } \frac{d^2 y}{dx^2} = y \cdot \frac{x^2 \left(-\frac{1}{x}\right) - (1 - \log x) \cdot 2x}{x^4} + \frac{1 - \log x}{x^2} \cdot \frac{dy}{dx}$$

$$\frac{dy}{dx} = 0$$

$$\text{or, } y \cdot \frac{1 - \log x}{x^2} = 0$$

$$\text{or, } 1 - \log x = 0 [\because y \neq 0]$$

$$\text{or, } \log x = 1 = \log e$$

$$\text{or, } x = e$$

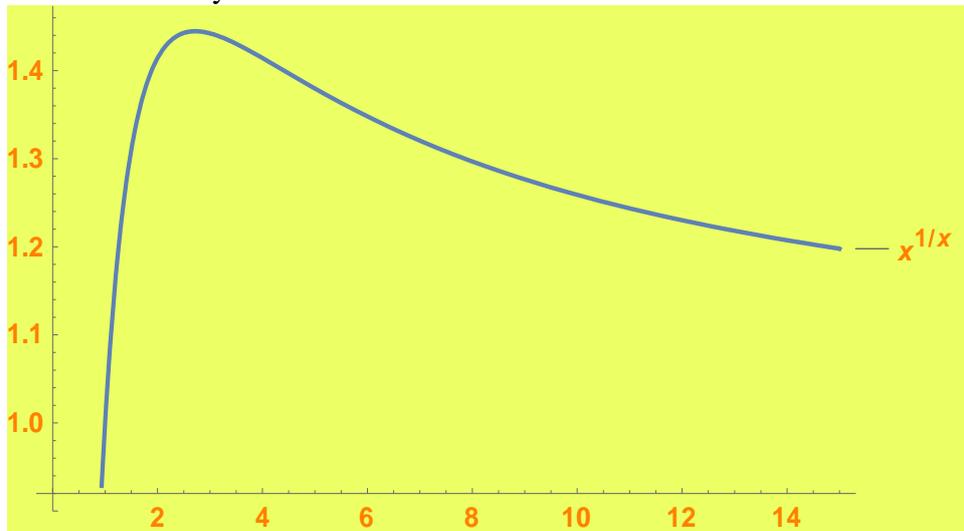
$$\text{Now, } \left[\frac{d^2 y}{dx^2} \right]_{x=e} = e^{\frac{1}{e}} \cdot \frac{e^2 \left(-\frac{1}{e}\right)}{e^4} = -\frac{e}{e^3} < 0$$

$$[\because 2 < e < 3]$$

Therefore, y has maximum value at $x=e$ and its maximum value is $e^{\frac{1}{e}}$

By plotting the curve of the function, $y = x^{\frac{1}{x}}$, we can easily visualize minimum value at

$x = e$ & value is $y = e^{\frac{1}{e}}$



For Visualization of Real Roots of Polynomials

Find the roots of the polynomial?

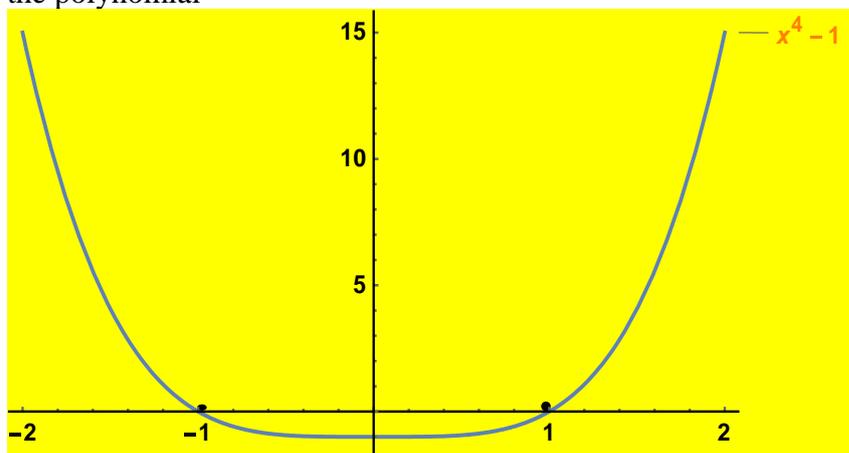
- $f(x) = x^4 - 1$

The polynomial will thus have linear factors $(x-1)$, and $(x+1)$.

$$f(x) = (x^2 - 1)(x^2 + 1)$$

or, $f(x) = (x-1)(x+1)(x^2 + 1)$, a polynomial of degree 4, has indeed only the two real roots 1 and -1.

By plotting the curve of the polynomial, $f(x) = x^4 - 1$, we can easily visualize the roots of the polynomial



The graph of the polynomial above intersects the x -axis at $x=-1$, and at $x=1$. Thus it has roots at $x=-1$ and at $x=1$.

Find the roots of the polynomial?

• $f(x) = -3172 + 3875x - 785x^2 + 24x^3 + 68x^4 - 11x^5 + x^6$

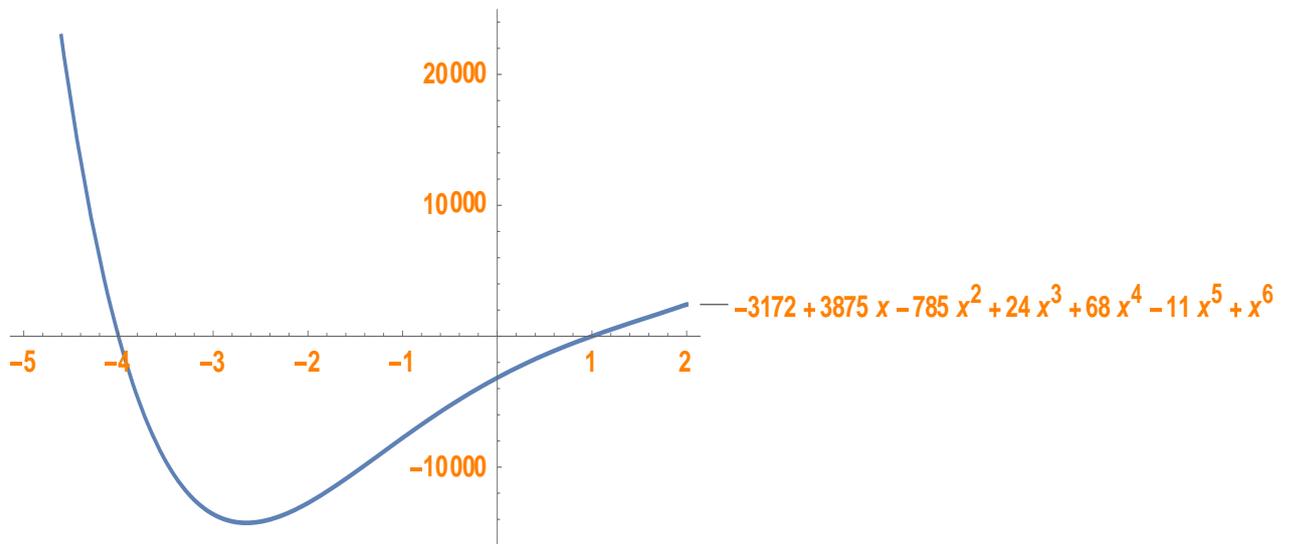
The polynomial will thus have linear factors

$$f(x) = -3172 + 3875x - 785x^2 + 24x^3 + 68x^4 - 11x^5 + x^6$$

or, $f(x) = (x^2 - 4x + 13)(x^2 - 10x + 61)(x - 1)(x + 4)$

a polynomial of degree 6, has indeed only the two real roots 1 and -4.

By plotting the curve of the polynomial, $f(x)$ we can easily visualize the roots of the polynomial



Advantages of Using CAS

- It helps develop visual/geometrical understanding.
- CAS can help to increase the value of the knowledge and degree of interest of students.
- Can explore concepts before “hand skills” to do so are available.
- Can explore realistic problems.
- CAS help to increase student motivation and improve students attitudes towards Mathematics.
- Due to the potential interactivity of these tools, students are able to attain a higher level of abstraction in mathematical problem-solving something which clearly represents a significant didactic accomplishment.
- Allows students to concentrate on problem formulation and solution analysis.
- Easy to give math demos and advanced mathematical ideas can be introduced very easily and concretely.
- It will help teachers to develop innovative, challenging and exploratory teaching modules.

- Researchers do not need to spend more time on tedious computations rather they can spend more time in analyzing and the computation part can be easily be done using these tools.
- People from other disciplines not having sound mathematical knowledge can very easily solve mathematical problems which they come across.

Drawbacks of Using CAS

In spite of so many benefits of using CAS there are some drawbacks, that are why many people advocate against its use and raise some concerns. Through our experiences and discussion with teachers and students, we are listing some of the drawbacks of using CAS.

- Students tend to use CAS blindly and they do not bother about then validity of answer obtained through CAS.
- Most often students try to use CAS as an advanced calculator and refuse to learn concepts.
- Decline of students' paper-and-pen skills.
- Difficulties in evaluation of a course taught using CAS.
- Greater time needed for class preparation.
- Lack of familiarity with the computer and CAS.
- Fear of making syntactical errors in class.
- Lack of administrative recognition of increasing teaching load.
- CAS syntax can be an unreasonable burden on students.
- The course can be victimized by equipment failure or inadequate equipment.
- Students' algebraic manipulation skills will deteriorate if they are allowed to rely on computer algebra but that these skills are an essential foundation for mathematics.
- CAS at time can produce meaningless expressions.
- Using CAS can potentially prevent students from making the proper connections between the techniques used and their mental approach to Mathematics.

Challenges and How to Overcome Drawbacks

There are several challenges if we want to implement CAS-based mathematics teaching in India. However, these challenges can be over come. We list some of the major challenges which will come across in order to employment of such tools in mathematics teaching.

Challenges and Difficulties

- Availability of computers in the laboratory and to teachers and students is still a distant dream.
- Most of the CAS are too costly and hence not affordable to college students and teachers.
- Classrooms are not equipped with relevant hardware which is required to integrate teaching using CAS.
- Teachers are not having proper computer literacy and knowledge of CAS.
- Many teachers are not willing to move from traditional teaching style to CAS-based teaching wherever necessary.
- Unavailability of innovative and exploratory teaching modules.
- Courses are not designed properly. It does not give space, time and opportunity of exploring the subject using CAS.

Overcomes these difficulties

- All institutes to have proper computer labs and to give students enough opportunities to explore.

- Use of free mathematical software like Matlab, Maxima, Maple etc. to be encouraged.
- Development of similar software may be initiated and encouraged.
- Classrooms should be equipped with relevant hardware.
- A series of teacher-training programmes throughout the country may be initiated in order to make them aware of such tools.
- Innovative teaching modules and projects be prepared which make students and teachers realize that these tools are not merely advanced calculators but can be used to solve a very complex problems and help them to experiment and explore (one of the vital aspects of learning).
- Courses may be redesigned to encourage the use of CAS and also provide time for its use.
- Students must be allowed sufficient time to learn the language and features of CAS before using it to enhance their learning.

The most appropriate approach involves using programming and CAS together to allow students to create the specific necessary functions that will allow them to solve the problems involved in the subject matter under this study.

CAS And Teachers

The classroom teacher is the key to the successful introduction of new methods and new technologies. Of course, it is possible for the student to come across these independently in the case of CAS. With the increasing speed of technological development, it is crucial that teachers keep themselves informed so that they are in a position to make valid judgments and adapt their teaching accordingly.

Teachers, of course, have a crucial role in students learning (with or without CAS). Integrating CAS into teaching changes many aspects of classroom practice which teachers will make on the basis of their prior teaching styles and their beliefs about mathematics and how it should be taught. While using CAS to solve problems, students sometime make silly mistakes which produce a totally irrelevant output. Teacher support and appropriate intervention is crucial to correct such mistakes. Judging the right amount of help at the right time is a skill acquired through experience. Computer algebra system use in mathematics teaching and learning is in its infancy. Nevertheless there are many teachers and educationalists who have integrated CAS into their teaching or conducted research into student understanding with CAS or who have led curriculum/assessment projects involving CAS use.

Conclusions

A computer algebra system is a tool not a self-contained learning package or encyclopedia of mathematical knowledge. It is the way in which it is presented to and used by students that determines its ability to influence learning. Much emphasis these days is placed on student-centered learning and less on the teaching but teaching and learning are equally important. It is necessary to first understand the learning process and then design teaching and learning activities to achieve these. Only then will students become deep learners. There are many implications of using computers in the teaching and learning of mathematics at university. As students often point out to us it is very exciting, enjoyable and productive to use computers in class. They are keen to use computers, so the environment becomes more conducive for learning. Students' natural curiosity can be utilized to its fullest potential because they are keen to explore and discover.

References

- Kadijevich D., (2007)**, Toward relating procedural and conceptual knowledge by CAS, Proceeding of CAME, Hungary.
- Flynn P., (2007)** CAS in Australia: A Brief Perspective, Proceeding of CAME, Hungary <http://www.lonklab.ac.uk/came/events/came5/index.html>.
- Buescher M., (2007)** CAS for “average” students, Proceeding of CAME.
- Bohm J., (2007)**, What is happening with CAS classrooms? Example Austria, Proceeding of CAME, Hungary., <http://www.lonklab.ac.uk/came/events/came5/index.html>.
- J. L. Galán García, M.A. Galán García, A. Gálvez Galiano, A.J. Jiménez Prieto, Y. Padilla Domínguez and P. Rodríguez Cielos, (2006)** Computer Algebra Systems: A basic tool for teaching Mathematics in Engineering. ICTE 2006, Spain.
- Bertemes J., (2006)** CAS-based Mathematics Teaching Project Analysis, Peer Learning Activity, Luxemburg, <http://www2.myschool.lu/home/pla/documents.asp>
- Leung F. K. S., (2006)**, The Impact of ICT Tools on Our Understanding of the Nature of Mathematics”, For the Learning of Mathematics, Vol. 26, number 1, (pp. 29-35).
- Majewski M., (2004)**, Seeing Is Believing: Reflections On The Use of Computer Graphics In Teaching Mathematics (Part II), CASTME International and CASTME Europe Conference, Cyprus, (pp.103-112)
- Van Herwaarden O. and Gielen J., (2002)**, An approach for the effective integration of Computer Algebra in an Undergraduate Calculus and Linear Algebra Course. Proceedings of the 2nd International Conference on the Teaching of Mathematics, Hersonissos, Crete, Greece.
- Cretchley P., (2002)** Mathematics and technology: How integrated is this learning partnership? Proceedings of the Vienna International Symposium on Integrating Technology into Mathematics Education, Vienna.
- Albano G., Desiderio M., (2002)** Improvements in teaching and learning using CAS, Proceedings of the Vienna International Symposium on Integrating Technology into Mathematics Education, Vienna, Austria.
- Artigue, M., (2001)**, Learning mathematics in a CAS environment, Proceeding of CAME, <http://itsn.mathstore.ac.uk/came/events/freudenthal>.
- Harris, G. A., (2000)**, The use of a Computer Algebra System in capstone mathematics courses for undergraduate mathematics majors. The International Journal of Computer Algebra in Mathematics Education, Vol. 7 (No.1): (pp. 33-62)
- Westermann T., (2000)**, Teaching Mathematics using a Computer Algebra, The International Journal of Computer Algebra in Mathematics Education, 7(4), (pp. 277-293)
- Strickland P., (1999)**, A Computer Algebra System for improving student's manipulation skills in Algebra, International Journal of Computer Algebra in Mathematics Education, 6(1), (pp.17-24)

A comparative study of smart phone preference among urban and rural college students

Mr. Gittu Baby*

Dr. P S Chandni**

Abstract

Smart phones are become a fervor of the world. There are different brands now available in the market. Different brands are trying their best to capture the smart phone markets in various countries. India is also the most favorable destination for smart phone manufacturers. Indian smart phone market is the second largest market after china. Many foreign companies are struggling to capture a lion share of the Indian market. The smart phone companies are more eagerly doing various researches to know the changing pulse of Indian market.

Keywords. Smart phones, brand, market, student, urban, rural

Introduction

There are many ways to describe a smart phone which become the elixir of life of today's world. The small tiny gadget having a dedicate operating system, a faster processor, a large display and can run office and communication application is really a wonder.

The role of smart phones is so important that it has replaced the newspaper, books and everything. Now everything comes into your palms. The world will come at your finger tips. India is becoming the most important hub for smart phones. Indian market is one of the fastest growing markets for smart phones. Indian people are much interested in smart phones. Many Indian and international brands are selling their smart phones in India. There are a lot of factors which tend the people to buy smart phones and its usage also depends on such factors. We cannot think of a world without smart phones. The attitude and buying behavior of young generation and other frequent users of smart phones is important for the industry.

Significance of the study

The last decade has witnessed a major breakthrough in the mobile phone industry with the arrival of a variety of new smart phones. Today's smart phones possess such improved technology and features that it has become almost a substitute for every other electronic equipment. The young generation, especially the college students who are fascinated by the features and other factors, are the leading users of these smart phones. Their uses vary from mere calling to internet browsing, social connectivity, online shopping etc. which is more different in urban and rural youth.

The study mainly helps the smart phone manufactures to design their products in accordance with the needs of young generation. It also helps people who are engaged in the smart phone industry.

Objectives of the study

1. To find out the nature of smart phone used by urban and rural college students.

*M.Phil. Scholar, Department of Commerce, Sree Narayana Guru College, K.G Chavadi, Coimbatore Tamilnadu

**Professor and Head, Department of Commerce, Sri Krishna Adithya College of Arts and Science Coimbatore

2. To find out the most used application in a smart phone.

Review of literature

NushratNahidaAfroz (2017), studied about students brand preferences towards smart phones. The study analyses various factors affecting their choice of brand, their brand satisfaction and their perception towards other features of smart phones.

Mrs. S. Bhuvanewari (2016) in her study titled "A study on mobile phone usage among college students in Palakkad", studied about usage, influence of smart phones among college students.

Dr.Maheswari V (2015), in her paper titled "A study on brand preference of mobile phone users in Chidambaram town", studied about the key players in mobile phone markets, brand preference and satisfaction of customers.

V. Josephine Lourdes De Rose (2015), studied about preference of smart phones among college students using cluster analysis in Tiruchirappalli. It analyses the factors affecting choice of smart phones with reference to college students.

MedhaDhital (2013), studied about brand preference of mobile phones in Kathmandu. The study mainly focused to find out the growing preference towards mobile phones.

Bulbul Sharma (2009), studied about brand preference of mobile phones among Ghaziabad students.

Research Methodology

Research Design

The study is both analytical and descriptive in nature. In pursuance of the objectives, the following methodology was adopted.

Sample Design

The Government College Kottayam was selected for representing the urban college students and Devamatha College Kuravilangad was selected as a representation of rural college students. The population of the study was identified as the total number of students in Government College Kottayam and Devamatha College Kuravilangad. From these 100 students were selected on the basis of convenience sampling method. The selected sample of students classified on the basis of age and gender.

Source of Data

Both primary and secondary data were collected and used for the study. Primary data was collected from the sample respondents through an interview schedule. The secondary data was collected from books and websites.

Tools for Analysis

The primary data collected through interview schedule was analyzed keeping in view the objectives of the study. Tables and graphs were also used for the preparation of the matters in a simple and understandable manner. For the purpose of analysis of data simple statistical tools like percentages and graphs are used.

Limitations of the study

1. Since there is only one college each for representing urban and rural college students it cannot produce accurate result.
2. The study is based on samples and hence it is not free from the inherent limitations of sample study.
3. Since the period of study is short it limits the scope.

4. The size of the paper used in project report is not sufficient for some important detailed tables so that was excluded from the project report and summary of the data were included.

Data analysis and Findings

Sample Profile

Table 1: Distribution of Sample

Colleges	Science	Arts	Commerce	Total
Government College Kottayam	30	18	21	69
Devamatha College Kuravilangad	12	12	7	31
Total	42	30	28	100

Source: Records of Government College Kottayam and Devamatha College Kuravilangad

Table 2: Nature of Smartphone

2.1 On the basis of Age

Nature of Smartphone in Government College on the basis of age

Age	GOVERNMENT COLLEGE								Grand Total
	New				Second Hand				
	Science	Arts	Commerce	Total	Science	Arts	Commerce	Total	
18	5 (16.67)	0 (0.00)	4 (19.05)	9 (13.04)	1 (3.33)	0 (0.00)	0 (0.00)	1 (1.45)	10 (14.49)
19	8 (26.67)	4 (22.22)	6 (28.57)	18 (26.09)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	18 (26.09)
20	7 (23.33)	5 (27.78)	3 (14.29)	15 (21.74)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	15 (21.74)
20	6 (20.00)	1 (5.56)	6 (28.57)	13 (18.84)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	13 (18.84)
22	0 (0.00)	3 (16.67)	1 (4.76)	4 (5.80)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	4 (5.80)
23	2 (6.67)	5 (27.78)	1 (4.76)	8 (11.59)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	8 (11.59)
24	1 (3.33)	0 (0.00)	0 (0.00)	1 (1.45)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.45)
Total	29 (96.67)	18 (100.00)	21 (100.00)	68 (98.55)	1 (3.33)	0 (0.00)	0 (0.00)	1 (1.45)	69 (100.00)

Source: Survey Data

(Figures in the parenthesis show the percentage of respective totals in the columns)

Nature of Smartphone in Devamatha College on the basis of age

Age	DEVAMATHA COLLEGE								Grand Total
	New				Second Hand				
	Science	Arts	Commerce	Total	Science	Arts	Commerce	Total	
18	3 (25.00)	1 (8.33)	0 (0.00)	4 (12.90)	0 (0.00)	1 (8.33)	0 (0.00)	1 (3.23)	5 (16.13)
19	5 (41.67)	3 (25.00)	1 (14.29)	9 (29.03)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	9 (29.03)
20	2 (16.67)	2 (16.67)	3 (42.86)	7 (22.58)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	7 (22.58)
21	2 (16.67)	3 (25.00)	2 (28.57)	7 (22.58)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	7 (22.58)
22	0 (0.00)	0 (0.00)	1 (14.29)	1 (3.23)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (3.23)
23	0 (0.00)	2 (16.67)	0 (0.00)	2 (6.45)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (6.45)
24	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Total	12 (100.00)	11 (91.67)	7 (100.00)	30 (96.77)	0 (0.00)	1 (8.33)	0 (0.00)	1 (3.23)	31 (100.00)

Source: Survey Data

Interpretation: The comparison between the above tables shows that the majority of the college students use new smart phones than second hands. But the students in Government College (98.55) use more new smart phones than Devamatha College (96.77). Students who are at the age of 19 use new smart phones more in both the colleges 26.09, 29.30 respectively. 100 percent students of Arts and Commerce stream in Government College and of Science and Commerce stream in Devamatha College are using a new Smartphone. So we can conclude that urban college students are using new Smartphone than rural college students.

Table 3

3.1 On the basis of Gender

Nature of Smartphone in Government College on the basis of gender

Gender	GOVERNMENT COLLEGE								Grand Total
	New				Second Hand				
	Science	Arts	Commerce	Total	Science	Arts	Commerce	Total	
Male	17 (56.67)	10 (55.56)	9 (42.86)	37 (53.62)	1 (3.33)	0 (0.00)	0 (0.00)	1 (1.45)	37 (53.62)
Female	12 (40.00)	8 (44.44)	12 (57.14)	31 (44.93)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	32 (46.38)
Total	29 (96.67)	18 (100.00)	21 (100.00)	68 (98.55)	1 (3.33)	0 (0.00)	0 (0.00)	1 (1.45)	69 (100.00)

Source: Survey Data

(Figures in the parenthesis show the percentage of respective totals in the columns)

Nature of Smartphone in Devamatha College on the basis of gender

Gender	DEVAMATHA COLLEGE								Grand Total
	New				Second Hand				
	Science	Arts	Commerce	Total	Science	Arts	Commerce	Total	
Male	7 (58.33)	10 (83.33)	6 (85.71)	23 (74.19)	0 (0.00)	1 (8.33)	0 (0.00)	1 (3.23)	24 (77.42)
Female	5 (41.67)	1 (8.33)	1 (14.29)	7 (22.58)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	7 (22.58)
Total	12 (100.00)	11 (91.67)	7 (100.00)	30 (96.77)	0 (0.00)	1 (8.33)	0 (0.00)	1 (3.23)	31 (100.00)

Source: Survey Data

(Figures in the parenthesis show the percentage of respective totals in the columns)

Interpretation: Male college students are using new Smartphone more as compared with female college students in both the colleges. In Government College, female students in the commerce stream use new Smartphone more than male students.

Table 4: The most used Application

4.1 On the basis of Age

The most used Application in Government College on the basis of age

Age	GOVERNMENT COLLEGE							Grand Total
	Whatsapp	Youtube	Facebook	Google	Google map	Games	Skype	
18	6 (8.70)	1 (1.45)	2 (2.90)	0 (0.00)	0 (0.00)	1 (1.45)	0 (0.00)	10 (14.49)
19	11 (15.94)	5 (7.25)	1 (1.45)	1 (1.45)	0 (0.00)	0 (0.00)	0 (0.00)	18 (26.09)
20	9 (13.04)	3 (4.35)	2 (2.90)	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.45)	15 (21.74)
21	8 (11.59)	2 (2.90)	2 (2.90)	1 (1.45)	0 (0.00)	0 (0.00)	0 (0.00)	13 (18.84)
22	1 (1.45)	2 (2.90)	0 (0.00)	0 (0.00)	1 (1.45)	0 (0.00)	0 (0.00)	4 (5.80)
23	6 (8.70)	1 (1.45)	1 (1.45)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	8 (11.59)
24	1 (1.45)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.45)
Total	42 (60.87)	14 (20.29)	8 (11.59)	2 (2.90)	1 (1.45)	1 (1.45)	1 (1.45)	69 (100.00)

Source: Survey Data

The most used Application in Devamatha College on the basis of age

Age	DEVAMATHA COLLEGE							Grand Total
	Whatsapp	Youtube	Facebook	Google	Google map	Games	Skype	
18	2 (6.45)	2 (6.45)	1 (3.23)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	5 (16.13)
19	1 (3.23)	5 (16.13)	3 (9.68)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	9 (29.03)
20	1 (3.23)	1 (3.23)	5 (16.13)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	7 (22.58)
21	0 (0.00)	1 (3.23)	6 (19.35)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	7 (22.58)
22	1 (3.23)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (3.23)
23	1 (3.23)	0 (0.00)	1 (3.23)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (6.45)
24	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Total	6 (19.35)	9 (29.03)	16 (51.61)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	31 (100.00)

Source: Survey Data

Interpretation: The above tables reveal that the most used application in Government College is Whatsapp (60.87) and in Devamatha College is Facebook (51.61). The second most used application in both the colleges is YouTube (20.29 and 29.03 respectively). The third most used application in Government College is Face book (11.59) and in Devamatha College is Whatsapp (19.35). The students in Devamatha College have not considered the applications of Google, Google map, Games and Skype as most used one.

Conclusion

Smartphone's have become an impetus among youth especially among college students. The mind – blogging features of smart phones helps it to surge into the minds of youth. The study reveals the fact that there are similarities and dissimilarities among both urban and rural college students in the usage of smart phones. From the study it is revealed that majority of the students use new smart phones than second hands. Urban college students are using new smart phones than rural college students. Male college students are using new smart phones as compared with female students in both colleges. Female students in the commerce Stream of Government College use new smart phones more than their male students. The most used application by students in urban college of whatsapp and students of rural college is face book. The second most used application by the students of both colleges is YouTube. We can understand that students of both colleges are interested in social networking applications. They consider smart phone as a way to express themselves towards the world. Therefore by focussing more on social networking applications the smart phone manufacturers can imbue their market share.

References

1. Dr.Maheswari. V “A study on brand preference of mobile phone users in Chidambaram town”, published in International Journal of Information Research and Review. Vol-2, No.2, Pp – 341 - 345
2. V. Josephine Lourdes De Rose. “A research paper on preference of smart phones among college students using cluster analysis in Tiruchirappalli”, published in International Journal of Engineering Management and Research. Vol-2, Issue.5, ISSN – 2249 –8672
3. Mrs. S. Bhuvanewari. “A study on mobile phone usage among college students in Palakkad”, published in International Journal of Advance Research and Innovative Ideas in Education. Vol-5, Issue.6, ISSN – 2395 –4396

Websites

1. www.idc.com
2. www.statista.com
3. www.sciencedirect.com

Comparative Study on Machine Learning and Data Mining Techniques for Diseases Diagnosis

Shallu Sehgal*

Dr Manisha Aggarwal**

Dr Deepak Gupta***

Arun Bashambu****

Abstract

An optimized method is presented to analyse and predict the risk of diseases like thyroid, diabetes, Parkinson, Liver disease, Hepatitis, chronic kidney disease, cardiovascular disease and breast cancer based on the patient symptoms, previous diagnosis and attributes. In bio-medical and health welfare domain, pattern identification, recognition, data mining and Machine Learning Techniques (MLT) provide the improvement in accuracy of prediction and diagnosis of different diseases. For the analysis of multi-dimensional and multimodal bio-medical data, MLT offers a classic approach for making automatic algorithms. We have got datasets of above listed diseases from KEEL dataset, UC Irvine ML datasets, data.gov.in and piminodine diabetes data. Considering the attributes of patient medical data, we analyse the degree of risk for the particular disease. We have used C4.5 decision tree along with Naive Bayes classifier to classify patients in different categories. Comparisons of classifiers can be done with other classifiers like logistic regression, artificial neural networks, K Nearest neighbour, support vector machines (SVM), random forests, bagging and boosting. For multi-dimensional data, it had been reduced using principal component analysis (PCA) and random sub sampling. In this survey, we provide the comparative analysis of various ML algorithms for prediction of different diseases such as Heart disease, Chronic Kidney Disease, Diabetes disease, Thyroid disease, Liver disease and Hepatitis disease. It highlights the significance of Data Mining and Machine Learning algorithms suite selection for accuracy.

Keywords: Machine learning; Artificial Neural Networks; Support Vector Machine; Classification algorithms; Decision tree; Naïve Bayes;

I. Introduction

Traditional medical mythology needs medical practitioners to cure patients using therapy, drugs and radiation. These practitioners are medical experts. They cannot recall all the cases, symptoms, medicines for every disease. For once if we assume the data is available for treating the diseases, it will be time intensive to do analysis on the available data for prescribing right medicine for the patient disease. Predictive analytics methods use the available medical data, for analysis and accordingly they predict medical consequences for patients. This data includes both historical as well as real time data. The real time data

* Research Scholar, Banasthali Vidyapith, Jaipur, India

** Associate Professor, Banasthali Vidyapith, Jaipur, India

*** Assistant Professor, MAIT, Sector 22, Rohini, Delhi India

**** Research Scholar, Banasthali Vidyapith, Jaipur, India

includes the latest trends in treatment. The historical data consider the past treatment outcomes of the patient. It is not possible to deal with large amount of information by any medical expert. In Medical science past records of medical symptoms, diseases prescribed medicine play a very important role in diagnose the nature of the disease. Also, the medical historical records reflect what worked well and what did not work well for the patient. The current medical condition could have been a result of real medication and treatment. There may be now new trends in the industry which may not have been utilised before and can provide significant enhancement to the treatment. In addition, medical industry has to take into consideration the aspect of cost and quality. The solution for all these problem of medical industry lies in the usage of Prescriptive analytics. Prescriptive analytics does not just bring out response, it reflects that medical services can be up levelled for becoming more patient oriented. This model will be much more relevant and useful. At the same time, it will provide qualitative medical services at economical prices This model is not substitute for required human participation. It supports medical practitioner decision making for enabling the best treatment.

Benefits of using machine learning (ML) in health domain are

- Improve the diagnosis process and increase diagnosis accuracy.
- Timely medical intervention for disease prevention.
- For high risk prediction cases, required avoidance steps can be taken for disease.
- Patients can do self-analysis.

Our goal is to analyse the risks of diseases like Thyroid, diabetes, Parkinson, Breast cancer, Hepatitis, cardiovascular disease and chronic kidney disease in individuals based on their diagnostics history, symptoms. Experienced and current lifestyle using machine learning and to suggest preventive measures, assessment and for information to the patient.

In last decade multiple attempts have been made for developing a model to predict the risk of various diseases. It has been found that many diseases depend on the history of the patient and his lifestyle.

II. Related Work

All the industries and domains have started using Machine- learning techniques and predictive analytics. Health care sector also adopted these techniques for medical application includes staffing prediction, chronic disease management, and information to the patient and population health risk assessment.

Diagnosis of Diseases by Using Different Machine Learning Algorithms – In past researcher scientist have done research on Data Mining and machine learning algorithms for prediction and disease detection. Research has shown that ML algorithms diagnose diseases accurately to a good extent. An approach of disease diagnosis by ML Techniques is depicted in below Fig 1. In this study ML Techniques is used for diagnosis of diseases viz. Thyroid, Heart, Diabetes, Liver, Chronic Kidney and Hepatitis.

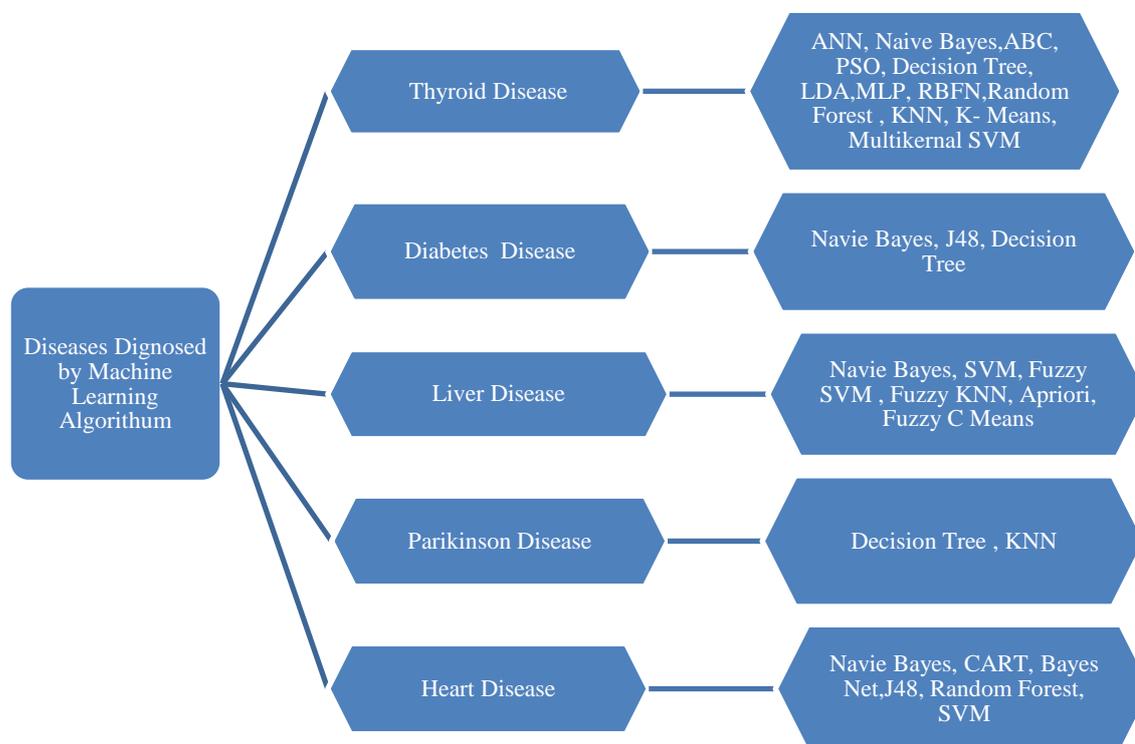


Figure 2. Disease Diagnosed by Machine Learning Techniques

Different papers published over the years have tried to develop a system to predict the risks of various diseases. Work has been done to develop classification models using various algorithms like naive Bayes, random forest, C4.5 decision tree, artificial neural networks, etc. The algorithms have been found to provide different percentage of accuracy where some have proved to be better than others. These have been discussed below.

Comprehensive analysis of machine learning techniques for Different disease diagnosis: -

Year / Reference	Publication	Author of Paper	Title of Paper	Algorithms /Accuracy	Conclusion	Limitations
2015 [1]	ELSEVIER	Prasad, V., Srinivasa Rao, T., & PVGD, Prasad, Reddy	Improvised prophecy using regularization method of machine learning algorithms on medical data	RRA (Ridge regression algorithm) & LASSO (least absolute shrinkage and selection operator algorithm) 79% &98.99%	SMS processes entered string with the knowledge and then the diagnose is suggested, otherwise the MLA will predict the TD Goiter and hypo thyroid disease is detected.	LASSO automatically selects relevant features and discards the others whereas RRA partially discards any features.
2015 [2]	International Journal of Research in Management, Science & Technology	Prerana Parveen Sehgal Khushboo Taneja	Predictive Data Mining for Diagnosis of Thyroid Disease using Neural Network	ANN 98.6%	A systematic approach for earlier diagnosis of Thyroid disease using back propagation algorithm used in neural network	Missing values are filled manually so as to improve the quality
2015 [3]	International Journal of Innovative Science, Engineering & Technology	Vembandasamy, K., Sasipriya, R. Deepa, E	Heart Diseases Detection Using Naive Bayes Algorithm	Naviebayes algorithm 86.4198%	Heart diseases prediction system successfully diagnose the medical data and predicts the heart diseases.	Several tests are done in the detection of cardiovascular diseases. By using datamining these tests could be

2015 [4]	International Journal of Software Engineering and Its Applications	Ahmed Fawzi Otoom Emad E. Abdallah Yousef Kilani Ahmed Kefaye Mohammad Ashour	Effective Diagnosis and Monitoring of Heart Disease	Bayes Net, 88.3% Support Vector Machines (SVM),85.1% Functional Trees (FT) 84.5%	Both diagnosis and monitoring of coronary artery disease	reduced Sensor mobile technologies and machine learning techniques are considered
2015 [5]	International Journal of Computer Science, Engineering and Information Technology	Dr. S.VijayaraniMr.S. Dhayanand	Liver Disease Prediction using SVM and Naïve Bayes Algorithms	classification algorithms (Naïve Bayes 61.28% support vector machine 79.66%)	Goal is to predict liver diseases like Liver cancer Acute Hepatitis Cirrhosis Bile Duct Chronic Hepatitis from L F T dataset using classification algorithms.	In terms of time execution, SVM takes more time as compared to the Naïve Bayes
2015 [6]	International Journal of Scientific and Research Publications	Abhinandan Dubey	A Classification of CKD Cases Using Multi Variate K-Means Clustering	K-Means Clustering Algorithm with a single mean vector of centroids	A single mean centroids vector for classification and making clusters of varying probability of likeliness of suspect being prone to CKD.	Suspects from clusters K1 & K3 fall in CKD class with full probability
2015 [7]	International Journal of Data Mining & Knowledge Management Process	AiswaryaIyer, S. Jeyalatha Ronak Sumbaly	Diagnosis of Using Classification Mining Techniques	J48 Decision Tree 76.9565% Naïve Bayes 79.5652%	Detection of diabetes in its early stages is the key for treatment	Replacing missing values and Normalization of values.
2016 [8]	The Journal of Supercomputing Springer	V. Prasad · T. Srinivasa Rao M. Surendra Prasad Babu	Thyroid disease diagnosis via hybrid architecture composing rough data sets theory and machine learning algo.	Artificial Bee Colony Optimization (ABC) 70% Particle swarm optimization (PSO) 93%	Smart approach in identifying the thyroid disease in a human	For getting results, few calculations use some missed attribute values which are not included in the knowledge likewise left blank
2016 [9]	International Journal of Innovative Research in Science Engg and Technology	Vikram V Hegde, Deepamala N	Automated Prediction of Thyroid Disease using ANN	Artificial neural networks (ANN). 85%	Prediction of hypothyroid, Hyper Thyroid, normal on the basis of T3, T4 and TSH	Employing a classifier for medical diagnosis with high robustness and reliability in different sample is a very critical issue.
2016 [10]	Oxford Journal of Intelligent Decision and Data Science	Ebru Turanoglu-Bekar, GozdeUlutagay, Suzan Kantarcı-Savas	Classification of Thyroid Disease by Using Data Mining Models: A Comparison of Decision Tree Algorithms	Decision Tree (NBTree 75% J48 and LADTree has 66.25%.)	Decision [tree DT] learning can predict & diagnose the thyroid	J48 is speedier and more interpretable than the NBTree
2016 [11]	B Broad Research in Artificial Intelligence and Neuroscience	Irina Ionina LiviuIonina	Prediction of Thyroid Disease Using Data Mining Techniques	Naive Bayes, 93.4% Decision Tree 96.5% Multilayer Perceptron 94.6% Radial Basis Function Network94.6%	More affected being women	In future, work will be done for identification of factors affecting thyroid diseases and on testing data mining techniques for the classification.
2016 [12]	Communications on Applied Electronics (CAE)	G. Rasitha Banu	Predicting Thyroid Disease using Linear Discriminant Analysis (LDA)	Linear Discriminant Analysis (LDA) Algorithm 99.62%	Data mining for Hypothyroid disease prediction.	Only Hypothyroid data is used. Hyperthyroid disease is not detected in this

			Data Mining Technique			paper
2016 [13]	International Journal of Computer Science and Mobile Computing	S.Ramya, Dr. N.Radha	Diagnosis of Chronic Kidney Disease Using Machine Learning Algorithms	Back-Propagation Neural Network, 80.4% Radial Basis Function 83.3% Random Forest 78.6%	The aim is reduction in diagnosis time and improvement in accuracy by usage of classification Techniques.	
2016 [14]	International Journal of Computer Science and Mobile Computing	Manish Kumar	Prediction of Chronic Kidney Disease Using Random Forest Machine Learning Algorithm	Random Forest (RF)100% Sequential Minimal Optimization (SMO) 97.9%, Naïve Bayes 95.6%, Radial Basis Function 98.8% Multilayer Perceptron Classifier (MLPC) 98% Simple Logistic (SLG).98.0%	The research brings out RF classifier is better than other classifiers for Area under the ROC curve (AUC), accuracy and MCC with values 1.0, 1.0 and 1.0	Exploration of all possible combination of various types of input features and machine learning [ML] algorithms.
2015 [15]	International Journal of Modern Computer Science	Sharan Monica.L, Satees Kumar.B	Analysis of CardioVascular Disease Prediction using Data Mining Techniques	J48 91.4% Naïve Bayes 88.5% CART 92.2%.	The goal is to predict the cardio disease with a smaller number of attributes.	The performance can be obtained based on the time taken to build the decision tree for the system.
2017 [16]	International Journal of Modern Computer Science	N.Pavithra Dr. Shanmugavadivu	Comparative Analysis of Predicting Kidney Disorder Using Clustering Techniques	Fuzzy C-means 92% K- Means 88%	The Fuzzy C-Means gets more accuracy than k-means. So Fuzzy C-means is better than K-Means	Multiple runs are performed in K means. Updates of centroid of cluster in Fuzzy C Means
2017 [17]	International Journal for Innovative Research in Science & Technology	Ammulu K Venugopal T	Thyroid Data Prediction using Data Classification Algorithm	Random forest approach 71.162%	Hypothyroid disorder is predicted. Result shows improved accuracy, precision, recall and F-measure by comparing the random forest with LDA algorithm	Validating the multiple disease dataset simultaneously like heart disease, diabetics, and many
2017 [18]	CSI Publications	Khushboo Chandel Veenita Kunwar Sai Sabitha Tanupriya Choudhury Saurabh Mukherjee	A comparative study on thyroid disease detection using K-nearest neighbour and Naive Bayes classification techniques	K-nearest neighbour, 93.44% Naive Bayes, 22.56%	Thyroid disease is detected. for classification of diseases KNN Precision was superior to Naive Bayes.	Very few Parameters are used for detection of thyroid disease.
2017 [19]	International Journal of Pure and Applied Mathematics	M.P.Gopinath	Comparative Study on Classification Algorithm for Thyroid Data Set	SVM 96.30% K-NN 95.3% Decision tree 91.2%	Accuracies are measured by considering certain values from confusion matrix like TP, TN, FP and FN	If we merge other classification technique e.g. fuzzy classification or neural network on the output that we got from SVM algorithm, then the system might provide better accuracy rate.
2017 [20]	International Conference on Trends in Electronics and Informatics	Mr. Kunal K Mahurkar Mr. D.P. Gaikwad	Normalization using improvised K-means applied in diagnosing thyroid disease	K- Means ANN 98.21%.	ANN is used for training and prediction before which Improvised K-Means is used	Prediction calculation is done by generalised prediction formula which includes

			with ANN.		for normalizing raw data.	False Negative, True-Positive.
2017 [21]	ScienceDirect Elsevier	Yoichi Hayashi	Synergy effects between grafting and subdivision in Re-RX with J48graft for the diagnosis of thyroid disease	Recursive-Rule Extraction algorithm with J48 graft is a white-box model 97.02%	For thyroid disease diagnosis, Extraction of highly accurate and concise classification rules is recommended	Only the validity of TSH and T4 value ranges extracted using feature selection method Re-RX with J48graft
2017 [22]	International Conference on Recent Trends in Engg Science and Management	Ms. Siddhi Vinod Parodkar Ms. AmitaDessai	Implementation of Neuro Fuzzy Classifier Model for Thyroid Disease Diagnosis	Neuro-fuzzy classifier (Scaled Conjugate Gradient algorithm)89.99%	Thyroid disease is detected.	Concept of math should be cleared
2017 [23]	International Journal of Emerging Trends & Technology in Computer Science	MehrbakhshNilashi Othman Ibrahim Hossein Ahmadi Leila Shahmoradi	A Knowledge-Based System for Breast Cancer Classification Using Fuzzy Logic Method	PCA-KNN 83.4% PCA-SVM 89.6% EM-PCA-CART-Fuzzy Rule-Based 94.1%	For breast cancer disease a new knowledge-based system by usage of the clustering, noise removal and classification techniques	In new techniques the expectation maximization is used as clustering method for clustering the data in the related groups. The classification & RT are used to create the fuzzy rules for classification of the breast cancer disease to overcome the multi collinearity issue we include PCA.
2017 [24]	Research Journal of Pharmaceutical, Biological and Chemical Sciences	K Shankar	Prediction of Most Risk Factors in Hepatitis Disease using Apriori Algorithm.	Apriori Algorithm	Find the most important factors causing hepatitis disease is the need of the day as the death rate is on the rise.	All the missed attribute values are replaced by zero. Convert the dataset into binary format denoting the presence or absence of hepatitis disease
2017 [25]	IOSR Journal of Electronics and Communication Engineering	Er. Jitender Er. Neeraj Julka	An Approach for Disease Data Classification Using Fuzzy Support Vector Machine	Fuzzy SVM Algorithm Fuzzy KNN means fuzzy c-means 99.45%	Accuracy of proposed model for Hepatitis Dataset is better than existing method.	same dataset can be used for classification using different classification algorithm.
2018 [26]	The Journal of Supercomputing springer	K. Shankar S.K Lakshmanprabu Deepak Gupta AndinoMaselena Victor Hugo C. de Albuquerque	Optimal feature-based multi-kernel SVM approach for thyroid disease classification	multi-kernel SVM algorithm/97.49%	To improve the classification of optimal features from the available raw medical dataset. This helps the physician in accurate diagnosis of thyroid	Taken high computation time, so avoid this
2018 [27]	International Journal of Pure and Applied Mathematics	Sumathi A, Nithya G Meganathan S	Classification of Thyroid Disease Using Data Mining Techniques	EM (Expectation-Maximization) clustering algorithm J48 classification Algorithm 99.25%	The additional attributes RT3 and Basel Metabolic temperature are used to diagnose the subtypes of hypothyroidism	The missing Values of the dataset will be replaced by mean value. EM clustering is used to improve the accuracy
2018 [28]	International Journal of Computer Science and Engineering	R. Sharmila, S. Chellammal	A conceptual method to enhance the prediction of heart diseases using the data techniques.	SVM 85% to 82.35%	SVM in parallel fashion gives better accuracy than sequential SVM	It suggests to use HDFS map reduce for storing large data in different nodes and executing the

						prediction algorithm using SVM in more than one node using SVM.
2018 [29]	Springer US ScienceDirect	Deepak Gupta Arnav Julka Sanchit Jain Tushar Aggarwal Ashish Khanna N.Arunkumar Victor Hugo C. de Albuquerque	Optimized cuttlefish algorithm for diagnosis of Parkinson's disease	Decision Tree and KNN used New algorithm Optimized cuttlefish algorithm	Cuttlefish Algorithm is proposed for early detection of Parkinson's disease	New algorithm Optimized cuttlefish has been proposed with limited feature selection

From the experimental result, we observe that data mining classification and feature selection methods have been used to identify analysis and predict for Thyroid and other diseases during the last few years. In research study we have used data mining, classification algo. like KNN, ANN, Naïve Bays, SVM, Decision Tree(J48/C4.5) and feature selection algorithm to improve the performance accuracy. Different classification algorithms are used in the below figure the result tells as KNN, ANN, DT (J48/C4.5) are scored best performance accuracy compared with other classification algorithms.

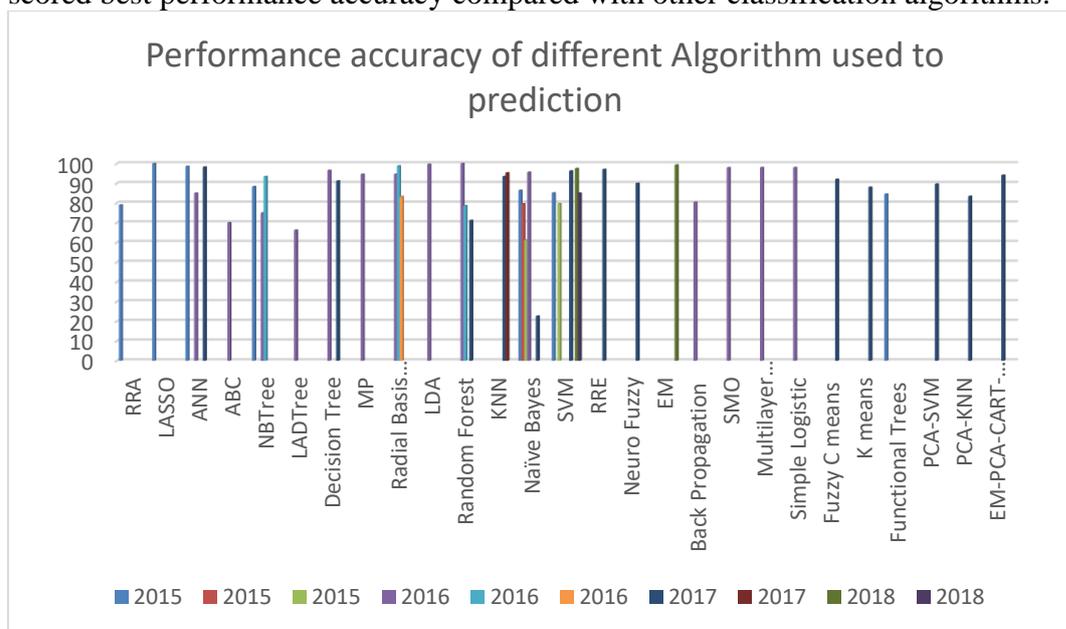


Fig. 2. Performance accuracy of different Algorithm used to predict

Analysis

In existing literature, Random Forest offers highest accuracy of 100% in 2016 for **Chronic Kidney Disease** prediction as in Table 1. Radial Basis Function has accuracy of 98.8%. Multilayer Perceptron Classifier (MLPC) has accuracy of 98%. Simple Logistic (SLG) has accuracy of 98.0%. Sequential Minimal Optimization (SMO) has accuracy of 97.9%. Naïve Bayes has accuracy of 95.6%. K-Means has accuracy of 88% and Fuzzy C-means has accuracy of 92% [16]. Radial Basis Function has accuracy of 83.3%. Back-Propagation Neural Network has accuracy of 80.4% [13] [14].

Linear Discriminant Analysis (LDA) Algorithm has accuracy of 99.62% [12]. Lasso has very high accuracy of 98.99% in 2015 for **Hypo-thyroid disease** detection. ANN also has highest accuracy of 98.6% for thyroid disease detection [2]. K- Means are used with ANN have accuracy of 98.21%. ANN has been taken into consideration for training and

prediction before which K-Means is used for normalizing raw data [20]. For thyroid classification, Decision Tree (NB Tree 75%, J48, LAD Tree 66.25%.) is used and having accuracy of 96.5% [10] [11]. K-nearest neighbour has accuracy of 95.3 % and SVM has accuracy of 96.30% [19]. Naïve Bayes has accuracy of 93.4%, Multilayer Perceptron has accuracy of 94.6. Radial Basis Function Network has accuracy of 94.6% Random forest approach is also used and have accuracy of 71.162% [17]. SVM has shown good performance result in many application areas. Ootom et al. have used SVM variant called SMO in 2015. Feature Selection technique had been used to find best features. SVM offers 85.1 accuracy and responds to these features. Recursive-Rule Extraction algorithm with J48 graft is a white-box model has accuracy of 97.02% [21]. Neuro-fuzzy classifier (Scaled Conjugate Gradient algorithm) has accuracy of 89.99% [22]. Other algorithm's used for thyroid disease detection and predictions are Artificial Bee Colony Optimization (ABC) (70%) and Particle swarm optimization (PSO) 93% [8]. Training and testing set of both data sets and datatype are different.

Naive Bayes algorithm is suited for diagnosis of **Diabetes** disease. Naive Bayes accuracy is 79.56% in 2015. The research outcome is that system can be used for accurate prediction with minimum error and also this technique is important to diagnose diabetes disease. However the proposed model for diagnosis of Diabetes needs more training data for creation as well as testing.

Naive Bayes algorithm has accuracy of 88.5% when used for **heart disease** detection [15][3]. Also, it has been observed Bayes Net 88.3% Support Vector Machines (SVM) 85.1%, Functional Trees (FT) 84.5% accuracy for heart disease [4]. J48 (91.4%) and CART (92.2%) are also used for cardo vascular Disease Prediction [15]. Figure 1 shows the Accuracy graph of Algorithms for the diagnosis of diseases according to time.

A new knowledge-based system for **breast cancer disease** by using the clustering and classification techniques PCA-KNN, PCA-SV, EM-PCA-CART-Fuzzy Rule-Based having accuracy of 83.4%, 89.6% and 94.1% respectively [23].

For **Liver Disease** prediction, it's observed Naïve Bayes, support vector machine give accuracy of 61.28% and 79.66% respectively. Goal of research work [5] is to predict liver diseases such as Acute Hepatitis, Cirrhosis, Bile Duct, Chronic Hepatitis and Liver cancer from LFT dataset using classification algorithms. In terms of time execution, SVM takes more time as compared to the Naïve Bayes. Liver disease causes Hepatitis. Accuracy of proposed model for Hepatitis Dataset is better than existing method. Fuzzy SVM Algorithm Fuzzy KNN means fuzzy c-means have accuracy of 99.45% [25].

Challenges of Medical Data Mining

In Medical and health domain, data is stored in database. There are multifaceted challenges when the data is associated. It's hard to do classification, analysis and prediction [30]. The challenges are:

No standard format: Different medical and health care systems use their own data formats. Standard format is not used for health care and medical data [30]

Distributed data: All the data is stored in different computing places and in a heterogenous display. It's impossible to get this distributed data in to a centralized data store. Complex algorithm needs to be developed for extracting this data from different storages [31].

No quality: Data quality is another big challenge in medical data. Different data quality aspects like eliminate noise, missing data and replace missing value [30].

Sharing of Data: Due to security and privacy reasons, it's difficult to achieve data sharing among health organization and patient's data. Treatment delivery service is impacted due to this. This adds to difficulty in detection, analysis and prediction [30], [31].

Large datasets: Data is massive having vast volume. Algorithm development is required to mine such massive data [31].

Description of Data Set used

Thyroid dataset is obtained from the UCI repository and it contains 7200 records. The dataset which consists of the thyroid disease consists of three classes namely- normal, hyperthyroidism, hypothyroidism with 215 samples

Breast Cancer Diagnostic Dataset is also taken from Prediction of breast cancer in three different datasets, namely: Wisconsin breast cancer (WBC), Wisconsin Diagnosis Breast Cancer (WDBC) and Wisconsin Prognosis Breast Cancer (WPBC) datasets. The attributes are the characteristics of the cell nuclei present in the image of mammogram. These are used to predict whether the tumour is malignant or benign.

Diabetes Database: This dataset was obtained from the Pima Indians Diabetes Database of National Institute of Diabetes. The donor of database is Vincent Sigillito. The data set was collected from women who are atleast 21 years of age and belong to pima indian heritage.

Total number of rows is 768. Total number of features are 8 plus class attribute

Heart Disease Dataset: This dataset was taken from UCI machine learning archive. The directory contains different databases for heart disease. We have selected the dataset for Cleveland.

Indian Liver Patient Dataset (ILPD) has been obtained from the UCI Repository. This dataset has 566 instances and 10 attributes. Attributes are Age, Gender, TB, DB, ALP, Sgpt, Sgot, TP, ALB and A/G Ratio. This dataset contains Liver Function Test details (LFT).

Hepatitis patients' dataset: Hepatitis disease patient actual data for 155 patients were collected from UCI Repository and simulated data of 10393 patient's records are used for this research work. These chosen datasets contain 19 attributes

IV. Conclusion and Future Work

Numerous statistical models for estimation are available in the assessment area but these have not been able to meet required performance in benchmark. The underlying issue with statistical model is that it is not successful in holding categorical data, account for missing values and handle large data points. These factors increase the real importance of Machine Learning Technologies. Machine learning plays a very significant role in many applications like image processing, data mining, NLP, and disease diagnostics. In all these areas, Machine Learning [ML] offers the required solutions. In these areas this study provides the analysis different ML techniques for diagnosis of different diseases viz. chronic kidney disease, heart disease, thyroid disease, liver & hepatitis disease, diabetes and Parkinson disease. Numerous ML algorithms give good performance results because they select the attributes accurately. From studies in the past, it has been found that for the detection of chronic Kidney Disease Random Forest provides accuracy of 100%. Thyroid disease is diagnosed by Lasso algorithm accurately. It has highest classification accuracy of 99.98%. J48 (91.4%) and CART (92.2%) provides 97.10% of correctness for the cardio vascular Disease diagnosis. For Breast Cancer disease detection, 94.1% accuracy is achieved by EM-PCA-CART-Fuzzy Rule-Based algorithm. The Fuzzy SVM Algorithm, Fuzzy KNN means and fuzzy c-means correctly classifies hepatitis disease providing

99.45% accuracy. This study and survey highlight the relative advantages (accuracy, timing etc.) of these algorithms. Machine Learning algorithm improvement graphs for prediction of diseases are analysed and presented. From the review and analysis it has been found that these ML algorithms provide improved accuracy on many critical diseases. This study lays a great foundation for development of a tool in community of Artificial Intelligence [AI].

Our proposed system will assist patients know what illness the symptoms point at and what's the associated risk of the patient to have the disease. In our research, we consider the algorithm accuracy for disease prediction and analysis so that we can suggest ways to increase prediction accuracy of the disease. In this way we present an effective health analytics system using Machine Learning [ML]. Lot of scope is there in improving the accuracy for disease prediction. Actually, it has been observed that the data available is insufficient to design a classifier model that can make prediction for disease control. In addition, the healthcare prediction isn't accurate enough for dependability. Our proposed system has covered some prominent and severe diseases. This model needs to be expanded in future for covering many more diseases. In future, we are working enhancing the performance of prediction system accuracy by ensemble different classifier algorithms.

References

1. Prasad, V., Srinivasa, Rao, T., & PVGD, Prasad, Reddy. (2015). Improvised prophecy using regularization method of machine learning algorithms on medical data. PMU, ELSEVIER, doi: 10.1016/j.pmu.2015.09.001.
2. Prerana PS, Taneja K. Predictive data mining for diagnosis of thyroid disease using neural network. International Journal of Research in Management, Science & Technology. 2015; 3(2):75–80. 42.
3. Vembandasamy, K., Sasipriya, R. and Deepa, E. (2015) Heart Diseases Detection Using Naive Bayes Algorithm. IJSET-International Journal of Innovative Science, Engineering & Technology, 2, 441-444.
4. Otoom, A.F., Abdallah, E.E., Kilani, Y., Kefaye, A. and Ashour, M. (2015) Effective Diagnosis and Monitoring of Heart Disease. International Journal of Software Engineering and Its Applications. 9, 143-156
5. Dr.S.Vijayarani, Mr.S.Dhayanand, (2015) "Liver Disease Prediction using SVM and Naïve Bayes Algorithms", International Journal of Science, Engineering and Technology Research (IJSETR).
6. Abhinandan Dubey "A Classification of CKD Cases Using MultiVariate K-Means Clustering." International Journal of Scientific and Research Publications, Volume 5, Issue 8, August2015 1 ISSN 2250-3153
- 7 Iyer, A., Jeyalatha, S. and Sumbaly, R. (2015) Diagnosis of Diabetes Using Classification Mining Techniques. International Journal of Data Mining & Knowledge Management Process (IJDKP), 5, 1-14. <https://doi.org/10.5121/ijdkp.2015.5101>
- 8 Prasad V, Srinivasa Rao T, Surendra Prasad Babu M (2016) Thyroid disease diagnosis via hybrid architecture composing rough data sets theory and machine learning algorithms. J Soft Computing 20(3):1179–1189
- 9 Vikram V Hegde, Deepmala N (2016) "Automated Prediction of Thyroid Disease using ANN", International Journal of Innovative Research in Science, Engineering and Technology, Volume 5, Special Issue, PP: 268,

- 10 Ebru Turanoglu-Bekar, GozdeUlutagay, Suzan Kantarcı-Savas(2016) Classification of Thyroid Disease by Using Data Mining Models: A Comparison of Decision Tree Algorithms. Oxford Journal of Intelligent Decision and Data Science
- 11 Irina IoninaLiviuiIoninaPrediction of Thyroid Disease Using Data Mining Techniques BRAIN. Broad Research in Artificial Intelligence and Neuroscience Volume 7, Issue 3, August 2016, ISSN 2067-3957 (online), ISSN 2068 – 0473.
- 12 Rasitha Banu D (2016) Predicting thyroid disease using linear discriminant analysis (LDA) data miningtechnique. J CommunAppl Electron 4(12):4–7
- 13 S. Ramya, Dr. N. Radha, “Diagnosis of Chronic Kidney Disease Using Machine Learning Algorithms”, International Journal of Innovative Research in Computer and Communication Engineering, Vol 4, issue 1, January 2016.
- 14 Manish Kumar, “Prediction of Chronic Kidney Disease Using Random Forest Machine Learning Algorithm”, International Journal of Compute Science and Mobile Computing, Vol 5, Issue 2, Feb-2016 Pg. 24-33.
- 15 Sharan Monica.L, SatheesKumar.B, “Analysis of CardioVasular Disease Prediction using Data Mining Techniques”, International Journal of Modern Computer Science, vol.4, 1 February 2016, pp.55-58
- 16 N.Pavithra, Dr. R. Shanmugavadivu (2017) Comparative Analysis of Predicting Kidney Disorder Using Clustering Techniques. IJMCS ISSN: 2320-7868 (Online)Volume 5, Issue 1, February, 2017
- 17 Ammulu K., Venugopal T., “Thyroid data prediction using data classification algorithm”, IJRST Volume 4 Issue 2 July 2017
- 18 Chandel K, Kunwar V, Sabitha S, Choudhury T, Mukherjee S (2016) A comparative study on thyroiddisease detection using K-nearest neighbor and Naive Bayes classification techniques. CSI Trans ICT4(2–4):313–319
- 19 M.P.Gopinath(2017) Comparative Study on Classification Algorithm for Thyroid Data Set International Journal of Pure and Applied Mathematics. ; ISSN: 1314-3395 Volume 117 No. 7 2017, pp 53-63
- 20 Mahurkar KK, Gaikwad DP (2017) Normalization using improvised K-means applied in diagnosing thyroid disease with ANN. In: 2017 International Conference on Trends in Electronics and Informatics (ICEI). IEEE, pp 579–583
- 21 Hayashi Y (2017) Synergy effects between grafting and subdivision in Re-RX with J48graft for thediagnosis of thyroid disease. J KnowlSyst 131:1–13
- 22 Ms. Siddhi Vinod Parodkar, Ms. AmitaDessai (2017)“Implementation of Neuro Fuzzy Classifier Model for Thyroid Disease Diagnosis” International Conference on Recent Trends in Engg Science and Management
- 23 MehrbakhshNilashi, Othman Ibrahim, Hossein Ahmadi, Leila Shahmoradi (2017) A knowledge-based system for breast cancer classification using fuzzy logic method. Telematics and Informatics 34(4) 133-144
- 24 Shankar K (2017) Prediction of most risk factors in hepatitis disease using apriori algorithm. Res JPharm Biol Chem Sci 8(5):477–484
- 25 Er. Jitender, Er. Neeraj Julka An Approach for Disease Data Classification Using Fuzzy Support Vctor Machine IOSR Journal of Electronics and Communication Engineering (IOSR-JECE) e-ISSN: 2278-2834,p- ISSN: 2278-8735. Volume 12, Issue 1, Ver. I (Jan.-Feb. 2017), PP 01-07 DOI: 10.9790/2834-1201010107

- 26 K Shankar, SK Lakshmanaprabu, Deepak Gupta, AndinoMaselena, Victor Hugo C de Albuquerque(2018) Optimal feature-based multi-kernel SVM approach for thyroid disease classification, The Journal of Supercomputing, Springer US pp 1-16
- 27 Sumathi A, Nithya G and Meganathan S(2018) Classification of Thyroid Disease Using Data MiningTechniques. In: International Journal of Pure and Applied Mathematics(ijpam) :Volume 119 No. 12 2018,pp 13881-13890
- 28 R. Sharmila, S. Chellammal, "A conceptual method to enhance the prediction of heart diseases using the data techniques", International Journal of Computer Science and Engineering, May 2018.
- 29 Deepak Gupta, Arnav Julka, Sanchit Jain, Tushar Aggarwal, Ashish Khanna, N Arunkumar, Victor Hugo C de Albuquerque Optimized Cuttlefish Algorithm for Diagnosis of Parkinson's Disease, Elsevier, Cognitive Systems Research, 2018.
- 30 P. Ahmad, Q. Saqib, and S. Q. A. Rizvi. "Techniques of data mining in healthcare: a review." International Journal of Computer Applications Vol. 120, no. 15 Jan. 2015.
- 31 B. R. Sharma, K. Daljeet, and A. Manju. "Review on Data Mining: Its Challenges, Issues and Applications." International Journal of Current Engineering and Technology vol. 3, no. 2 jun. 2013.

Effect of Demonetization on Various Sectors in India

DR SANTOSH KUMAR YADAV*

Abstract

The Indian government decided to demonetize the 500- and 1000- rupee notes, the two biggest denominations in its currency system; these notes accounted for 86% of the country's circulating cash. With little warning, Prime Minister of India Narendra Modi announced to the citizenry on Nov. 8 that those notes were worthless, effective immediately and they had until the end of the year to deposit or exchange them for newly introduced 2000 rupee and 500 rupee bills. Chaos ensued in the cash-dependent economy (some 78% of all Indian customer transactions are in cash), as long, snaking lines formed outside ATMs and banks, which had to shut down for a day. The new rupee notes have different specifications, including size and thickness, requiring re-calibration of ATMs: only 60% of the country's 200,000 ATMs were operational. Even those dispensing bills of lower denominations faced shortages. The government's restriction on daily withdrawal amounts added to the misery, though a waiver on transaction fees did help a bit. Small businesses and households struggled to find cash and reports of daily wage workers not receiving their dues surfaced. The rupee fell sharply against the dollar. The government's goal (and rationale for the abrupt announcement) was to combat India's thriving underground economy on several fronts: eradicate counterfeit currency, fight tax evasion (only 1% of the population pays taxes), eliminate black money gotten from money laundering and terrorist-financing activities, and to promote a cashless economy. Individuals and entities with huge sums of black money gotten from parallel cash systems were forced to take their large-denomination notes to a bank, which was by law required to acquire tax information on them. If the owner could not provide proof of making any tax payments on the cash, a penalty of 200% of the owed amount was imposed.

Keywords: Denomination, India, Reserve Bank of India, 500, 1000

Introduction

The Reserve Bank of India (RBI) has come out with its annual report giving a balance-sheet of demonetisation implemented 21 months ago. Of Rs 15.41 lakh crore demonetised currency notes of Rs 500 and Rs 1,000 denominations, only Rs 10,720 crore did not reach to the banks or the RBI. This means only 0.7 per cent of demonetised currency notes were junked in the exercise. The government had initially expected that approximately Rs 3 lakh crore of demonetised currency notes would not come back to the banking system, thus shedding the substantial weight of black money. While announcing demonetisation on November 8 in 2016, Prime Minister Narendra Modi had outlined three broad objectives to fight black money, corruption and terror funding. These objectives have always been debatable for the lack of accurate verifiable data. Soon after the RBI released its annual report, former Finance Minister P Chidambaram launched a fresh attack on the Modi government saying that the country paid a huge price for demonetisation by way of job

*DEPARTMENT OF COMMERCE AND BUSINESS ADMINISTRATION, L.N MITHILA UNIVERSITY DARBHANGA, BIHAR

loss, closure of industries and the GDP growth. Overnight, people in India realized that the cash in their pockets had no value. A window of fifty days was granted to 1.3 billion people to convert their old notes into new ones. Businesses, especially in the unorganized sectors, came to a grinding halt. Patients in hospitals faced huge problems, farmers had difficulty buying inputs, weddings were scaled down, and fishermen watched their catch rot. Many lost their jobs and could not support their families. A year later, the RBI announced that 99 per cent of the old currency notes had been deposited with it. India continues to grapple with the effects of this move. The black economy has not been dented; counterfeiting and terrorism continue; the credibility of the RBI, banks and currency is damaged; the accountability of the Parliament and the prime minister has been eroded; and the social divide has widened. There have been many arguments and counter-arguments from both sides, but they have missed the complete picture.

2016 Indian Banknote Demonetisation

On 8 November 2016, the Government of India announced the demonetisation of all ₹500 and ₹1000 banknotes of the Mahatma Gandhi Series. It also announced the issuance of new ₹500 and ₹2000 banknotes in exchange for the demonetised banknotes.* The government claimed that the action would curtail the shadow economy and reduce the use of illicit and counterfeit cash to fund illegal activity and terrorism.†

The announcement of demonetisation was followed by prolonged cash shortages in the weeks that followed, which created significant disruption throughout the economy.‡ People seeking to exchange their banknotes had to stand in lengthy queues, and several deaths were linked to the rush to exchange cash.§ According to a 2018 report from the Reserve Bank of India, approximately 99.3% of the demonetised banknotes, or ₹15.30 lakh crore (15.3 trillion) of the ₹15.41 lakh crore that had been demonetised, were deposited with the banking system. The banknotes that were not deposited were only worth ₹10,720 crore (107.2 billion),** leading analysts to state that the effort had failed to remove black money from the economy.†† The BSE SENSEX and NIFTY 50 stock indices fell over 6 percent on the day after the announcement.‡‡ The move reduced the country's industrial production and its GDP growth rate.§§ Initially, the move received support from several bankers as well as from some international commentators. The move was also criticised as poorly planned and unfair, and was met with protests, litigation, and strikes against the government in

**India's Demonetisation Kills 100 People Apparently - This Is Not An Important Number*". Dec 8, 2016, 04:47am <https://www.forbes.com/sites/timworstall/2016/12/08/indias-demonetisation-kills-100-people-apparently-this-is-not-an-important-number/#3da81986237a>

†*Withdrawal of Legal Tender Status for ₹ 500 and ₹ 1000 Notes: RBI Notice (Revised)*". Reserve Bank of India. 8 November 2016.

‡*Notes out of circulation*". *The Times of India*. 8 November 2016, <https://timesofindia.indiatimes.com/india/Rs-500-and-Rs-1000-notes-pulled-out-of-circulation-immediately-PM-Narendra-Modi/articleshow/55315473.cms?>

§*Saikia, Bijoy Sankar (18 November 2016). "Demonetisation may drag India behind China in GDP growth, rob fastest-growing", https://economictimes.indiatimes.com/markets/stocks/news/demonetisation-to-drag-india-behind-china-in-gdp-growth-rob-fastest-growing-economy-tag/articleshow/55492970.cms*

***Dutta, Prabash K. (30 August 2018). "Demonetisation: What India gained, and lost". India Today.*

††*India demonetisation failed to purge black money". Financial Times. https://www.ft.com/content/7dbe0e14-8d8a-11e7-a352-e46f43c5825d*

‡‡*"India rupee: Illegal cash crackdown failed - bank report". BBC News. 30 August 2017. Retrieved 31 August 2017 – via www.bbc.com.*

§§*"Thanks to Demonetization and GST, India's GDP growth hit a 4-year low at 6.5 per cent". India Today. Retrieved 2 October 2018.*

several places across India. Debates also took place concerning the move in both houses of parliament.***

DEMONETISATION PROCESS



Demonetised ₹500 and ₹1000 banknotes of the Mahatma Gandhi Series

Preparation and Announcement

The plan to demonetise the ₹500 and ₹1000 banknotes was initiated between six and ten months before it was announced, and was kept confidential. In April 2016, a report by the State Bank of India analysed possible strategies and effects demonetisation.^{†††} In May 2016, the Reserve Bank of India had started preparing for new banknotes and confirmed the design of ₹2000 banknotes in August 2016. The printing of new banknotes started in October when the news stories of forthcoming new banknotes appeared in the media.^{‡‡‡} On 27 October 2016, the Hindi daily *Dainik Jagran* published a report quoting RBI sources speaking of the forthcoming of ₹2000 banknotes alongside withdrawal of ₹500 and ₹1000 banknotes.^{§§§} On 21 October 2016, *The Hindu Business Line* had also published a report on forthcoming ₹2000 banknote.^{****} The Union cabinet was informed about the plan on 8 November 2016 in a meeting in the evening called by the Indian Prime Minister Narendra Modi.^{††††} Soon after the meeting, Modi announced the demonetisation in an unscheduled

***"Demonetisation debate in Parliament: Disaster, says Chidambaram; high cash economy corrupt, counters Jaitley : India, News - India Today". [Indiatoday.intoday.in](http://indiatoday.intoday.in).

†††"Rs 500, Rs 1,000 note rumours, not polls, behind cash surge: SBI". *The Times of India*. 8 April 2016. <https://timesofindia.indiatimes.com/business/india-business/Rs-500-Rs-1000-note-rumours-not-polls-behind-cash-surge-SBI/articleshow/51736091.cms>

‡‡‡Roychoudhury, Arup (10 November 2016). "Demonetisation: In the works for 6 months, 10 people in the loop, including Raghuram Rajan". *Business Standard India*. https://www.business-standard.com/article/economy-policy/demonetisation-in-the-works-for-6-months-10-people-in-the-loop-including-raghuram-rajana-116111000009_1.html

§§§*The Hindu business line* article about coming 2000 Rupee note and possible withdrawal of 500 and 1000 rupee notes". <https://web.archive.org/web/20170225034010/http://www.thehindubusinessline.com/money-and-banking/coming-soon-to-your-wallet-2000-notes/article9252371.ece>

****Bhatt, Abhinav (8 November 2016). "Watch PM Modi's Entire Speech on Discontinuing 500, 1000 Rupee Notes". *NDTV India*. <https://www.ndtv.com/india-news/pm-modi-speaks-to-nation-tonight-at-8-pm-1622948>

††††Sinha, Smita (7 November 2017). "One year of note ban: The ultra-secret move that no one came to know for several months". *The Economic Times*. <https://economictimes.indiatimes.com/news/politics-and-nation/one-year-of-note-ban-the-ultra-secret-move-that-no-one-came-to-know-for-several-months/articleshow/61528334.cms>

live national televised address at 20:15 IST.^{††††} He declared circulation of all ₹500 and ₹1,000 banknotes of the Mahatma Gandhi Series as invalid effective from the midnight of the same day, and announced the issuance of new ₹500 and ₹2,000 banknotes of the Mahatma Gandhi New Series in exchange for the demonetised banknotes.^{§§§§}

Cash Exchange and Withdrawal

The Reserve Bank of India stipulated that the demonetised banknotes could be deposited with banks over a period of fifty days until 30 December 2016. The banknotes could also be exchanged for legal tender over the counter at all banks. The limit for such exchange was ₹4,000 per person from 8 to 13 November, was increased to ₹4,500 from 14 to 17 November, and reduced to ₹2,000 from 18 to 25 November.^{*****} The exchange of banknotes was stopped completely on 25 November, although the government had previously stated that the volume of exchange would be increased after that date.^{†††††} International airports also facilitated an exchange of banknotes for foreign tourists and out-bound travelers, amounting to a total value of ₹5,000 per person.^{†††††} Fuel pumps, government hospitals, railway and airline booking counters, state-government recognised dairies and ration stores, and crematoriums were allowed to accept the demonetised banknotes until 2 December 2016. Cash withdrawals from bank accounts were restricted to ₹10,000 per day and ₹20,000 per week per account from 10 to 13 November. This limit was increased to ₹24,000 per week from 14 November 2016. Limits on cash withdrawals from Current accounts/ Cash credit accounts/ Overdraft accounts were withdrawn later. RBI increased the withdrawal limit from Savings Bank account to ₹50,000 from the earlier ₹24,000 on 20 February 2017 and then on 13 March 2017, it removed all withdrawal limits from Savings Bank Accounts^{§§§§§} a daily limit on withdrawals from ATMs was also imposed varying from ₹2,000 per day until 14 November,^{*****} and ₹2,500 per day until 31 December. This limit was increased to ₹4,500 per day from 1 January,^{††††††} and again to ₹10,000 from 16 January 2017. From 17 November, families were allowed to withdraw ₹250,000 for wedding expenses. Farmers were permitted to withdraw ₹25,000 per week against crop loans.

^{††††}"Demonetisation of Rs. 500 and Rs. 1000 notes: RBI explains". *The Hindu*. 8 November 2016. <https://www.thehindu.com/news/national/Demonetisation-of-Rs.-500-and-Rs.-1000-notes-RBI-explains/article16440296.ece>

^{§§§§}Demonetisation anniversary: Full text of Prime Minister Narendra Modi's speech from 8 November, 2016 - Firstpost". www.firstpost.com

^{*****}17 November Government press release"(PDF). Ministry of Finance, Government of India. Archived from the original(PDF)

^{†††††}"All note exchange stopped from today, PM Modi goes back on promise of hike after November 24". <https://indianexpress.com/article/india/india-news-india/pm-modi-said-exchange-limit-to-be-hiked-after-november-24-exchange-stopped-4393985/>

^{†††††}Outlets that will accept Rs 1,000 and Rs 500 notes in next 72 hours". *The Economic Times*. <https://economictimes.indiatimes.com/news/economy/policy/outlets-that-will-accept-rs-1000-and-rs-500-notes-in-next-72-hours/articleshow/55317768.cms>

^{§§§§§}"RBI removes limit on cash withdrawal, banks go back to pre-demonetisation era". *The Financial Express*. <https://www.financialexpress.com/india-news/rbi-removes-limit-on-cash-withdrawal-banks-go-back-to-pre-demonetisation-era/586375/>

^{*****}ATMs –Non-dispensing of Old High Denomination Notes – Closure of operations". Reserve Bank of India. <https://rbi.org.in/Scripts/NotificationUser.aspx?Id=10683&Mode=0>

^{††††††}Cash withdrawal from ATMs – Enhancement of daily limits". Reserve Bank of India, <https://www.rbi.org.in/scripts/NotificationUser.aspx?Id=10807&Mode=0>

gurudwaras are exempted from inquiry by the tax department⁺⁺⁺⁺⁺ which is sometimes misused to launder money.⁺⁺⁺⁺⁺ After the demonetisation, there was a spike in donations in the form of the demonetised banknotes in temples. People had booked large number of railway tickets to dispose of unaccounted cash. It came to notice of the Indian Railways authorities which imposed restrictions to check evasion.^{*****}

Banknotes in Circulation

On 28 October 2016 the total banknotes in circulation in India were valued at ₹17.77 trillion (US\$250 billion); what proportion of this derived from ₹500 and ₹1,000 banknotes was unknown. In its annual report of March 2016, the Reserve Bank of India (RBI) stated that total banknotes in circulation valued ₹16.42 trillion (US\$230 billion) of which nearly 86% (around ₹14.18 trillion (US\$200 billion)) derived from ₹500 and ₹1,000 banknotes. In terms of volume, the report stated that 24% (around 22.03 billion) of the total 9026.6 crore (90.26 billion) banknotes in circulation were ₹500 and ₹1,000 banknotes.⁺⁺⁺⁺⁺ Before demonetisation (November 2016), there were banknotes worth ₹17.97 lakh crore in the market. The demonetised banknotes constituted 86.4% of it. By March 2018, there were banknotes worth ₹18.03 lakh crore in the market; increase of 9.9%. New banknotes of ₹2000 and ₹500 constitute 80.6% of it. So there was only 5.8% increase in small denomination banknotes. The volume of banknotes in the market increased by 2.1%.⁺⁺⁺⁺⁺ The banknotes in circulation had increased to ₹19.5 lakh crore in September 2018.⁺⁺⁺⁺⁺ The banknotes in circulation had reached to the level before demonetisation in 2018.

Transportation

The All India Motor Transport Congress claimed that about 800,000 truck drivers and conductors were affected with shortage of cash, with around 400,000 trucks stranded at major highways across India.^{*****} While major highway toll junctions on the Gujarat and Delhi-Mumbai highways also saw long queues as toll plaza operators refused the demonetised banknotes.⁺⁺⁺⁺⁺ The Ministry of Road Transport and Highways subsequently announced a suspension of toll collections on all national highways across

⁺⁺⁺⁺⁺"Tiffin service to dental implants: All tried to beat system, swap old notes". <https://indianexpress.com/article/india/demonetisation-tiffin-service-to-dental-implants-all-tried-to-beat-system-swap-old-notes-income-tax-department-raids-4410874/>

⁺⁺⁺⁺⁺"Rs 500/Rs 1000 demonetisation: Temple money from hundis not to come under scanner". <https://www.thenewsminute.com/article/rs-500rs-1000-demonetisation-temple-money-hundis-not-come-under-scanner-52701>

^{*****}"13 Ways In Which Indians Will Convert Their Black Money Into White Even After Demonetisation". https://www.huffingtonpost.in/404/?error=not_found&url=%2F2016%2F11%2F13%2F13-ways-in-which-indians-will-convert-their-black-money-into-whi%2F

⁺⁺⁺⁺⁺Damodaran, Harish (9 November 2016). "Are banks equipped to replace 2,300 crore pieces of Rs 500 and Rs 1,000 notes?". *The Indian Express*. <https://indianexpress.com/article/opinion/web-edits/rs-500-rs-1000-notes-are-banks-equipped-to-replace-1874-crore-pieces-of-notes-4364746/>

⁺⁺⁺⁺⁺How Successful was Demonetisation? Four Takeaways From the RBI's Annual Report". *The Wire* <https://thewire.in/economy/how-successful-was-demonetisation-four-takeaways-from-the-rbis-annual-report>

⁺⁺⁺⁺⁺Currency in circulation slows down since May".

^{*****}"Demonetization: With no cash on hand, 4 lakh trucks stranded on highways". 14 November 2016 <https://www.dnaindia.com/india/report-demonetization-with-no-cash-on-hand-4-lakh-trucks-stranded-on-highways-2273414>

⁺⁺⁺⁺⁺"Toll tax suspended on national highways till Nov 11, banks open this weekend". *Hindustan Times*. <https://www.hindustantimes.com/india-news/toll-collection-suspended-across-the-country-till-nov-11-highways-ministry/story-1bAQIFhgp3R26ja4z9ODDK.html>

the country until 2 December as well as acceptance of demonetised ₹500 banknote as a toll from 2 to 15 December.††††††††††

Stock Market

As a combined effect of demonetisation and US presidential election, the stock market indices dropped to an around six-month low in the week following the announcement. The day after the demonetisation announcement, BSE SENSEX crashed nearly 1,689 points and NIFTY 50 plunged by over 541 points. By the end of the intraday trading session on 15 November 2016, the BSE SENSEX index was lower by 565 points and the NIFTY 50 index was below 8100 intraday.†††††††††† There was a marginal effects on stock market during November–December 2016. A data study (July 2016 - February 2017) of 54 companies across 13 sectors listed with the NSE showed that companies in cement, cotton and rubber sectors showed an increase in total trades while companies in automotive, clothing, foods, paper, real estate, retail, steel, sugar, tea and textiles sectors showed a decrease in total trades after demonetisation.†††††††††† Demonetisation had a negative impact on stock market returns evidenced from NIFTY 50 and other NIFTY sectoral indices.††††††††††

Industrial Output

There was a reduction in industrial output as industries were hit by the cash shortage.†††††††††† The Purchasing Managers' Index (PMI) fell to 46.7 in November 2016 from 54.5 in October 2016, recording its sharpest reduction in three years.†††††††††† A reading above 50 indicates growth and a reading below shows contraction. This indicates a slowdown in both, manufacturing and services industries.†††††††††† The PMI report also showed that the reduction in inflation in November 2016 was due to shortage in money supply.†††††††††† The growth in eight core sectors such as cement, steel and refinery products, which constitute 38% of the Index of industrial production (IIP), was only to 4.9 percent in November 2016 as compared with 6.6 percent a month ago.††††††††††

Agriculture

Transactions in the agriculture sector are heavily dependent on cash and were adversely affected by the demonetisation.†††††††††† Due to scarcity of the new banknotes, many

†††††††††† "Toll collection on all national highways suspended till December 2". www.business today.in

†††††††††† Chakravarty, Manas (3 January 2017). "How much has demonetisation affected the stock market?". *LiveMint*. <https://www.livemint.com/Money/hRb1noUQV17fmP0o1GNQEJ/How-much-has-demonetisation-affected-the-stock-market.html>

†††††††††† Mukundan, Anagha (1 June 2017). *Impact of Demonetisation on Indian Stock Market*. A P J Abdul Kalam Technological University. doi:10.13140/rg.2.2.24870.63042.

†††††††††† Anoop, Patil; Parab, Narayan; Reddy, Y. V (2018). "Analyzing the Impact of Demonetization on the Indian Stock Market: Sectoral Evidence using GARCH Model". *Australasian Accounting, Business and Finance Journal*. 12 (2): 104–116. doi:10.14453/aabfj.v12i2.7. ISSN 1834-2000.

†††††††††† Correspondent, Special. "Demonetisation hit economy: Jamir". *The Hindu*. <https://www.thehindu.com/news/national/other-states/Demonetisation-hit-economy-Jamir/article17349806.ece>

†††††††††† Seth, Dilasha (6 December 2016). "Slowdown due to demonetisation: PMI services shrinks in November after 17 months". *Business Standard India – via Business Standard*.

†††††††††† 5 Bleak Numbers That Show Demonetisation Impact On The Economy". https://www.huffingtonpost.in/404/?error=not_found&url=%2F2017%2F01%2F03%2Ffive-worrying-numbers-that-show-demonetisation-impact-on-economy%2F

†††††††††† "Demonetisation impact: Three sets of numbers tell us how Modi's gamble has slowed the economy". 3 January 2017.

Demonetisation: Farmers fear loss of crops and income after currency ban". *Firstpost*. 18 November 2016.††††††††††

†††††††††† How Demonetisation Has Affected India's Agricultural And Food Markets". *Huffington Post India*. https://www.huffingtonpost.in/404/?error=not_found&url=%2Fnidhi-nath-srinivas%2Fhow-demonetisation-has-affected-indias-agricultural-and-food-ma%2F

farmers have insufficient cash to purchase seeds, fertilisers and pesticides needed for the plantation of rabi crops usually sown around mid-November. Farmers and their unions conducted protest rallies in Gujarat, Amritsar and Muzaffarnagar against the demonetisation as well as against restrictions imposed by the Reserve Bank of India on district cooperative central banks which were ordered not to accept or exchange the demonetised banknotes.***** The shortage of cash led to plunge in demand which in turn led to a crash in the prices of crops. Farmers were unable to recover even the costs of transportation from their fields to the market from the low prices offered.†††††††††† Some farmers dumped their produce in protest against the government.††††††††††

Cost to Banks

Before demonetisation, the RBI had spent ₹3,421 crore to print banknotes in 2015-2016 (July to June). The cost of printing new banknotes escalated to ₹7,965 crore in 2016-17 and ₹4,912 crore in 2017-18. This resulted in a decline in the dividend paid to the government from ₹65,876 crore in 2015-16 to ₹30,659 crore in 2016-17 and ₹50,000 crore in 2017-18.§§§§§§§§§§ It was estimated that this decrease in income for the government could cause the fiscal deficit for the financial year 2016-17 to increase from the targeted 3.2% to 3.4%. To avoid increasing the fiscal deficit, the government would have to reduce spending on social schemes, or increase revenue through taxes or other means. The Indian Air Force was paid ₹29.41 crore to move banknotes after demonetisation.*****

Deaths

Several people were reported to have died from standing in queues for hours to exchange their demonetised banknotes.†††††††††† Deaths were also attributed to lack of medical help due to refusal of demonetised banknotes by hospitals.†††††††††† By the end of December 2016, political opposition leaders claimed that over 100 people had died due to demonetisation.§§§§§§§§§§ In March 2017, the government stated that they received no official report on deaths connected to demonetisation. Later in December 2018, Jaitley

*****Farmers forced to dump their produce as note ban turns bumper crop worthless". *Hindustan Times*<https://www.hindustantimes.com/india-news/farmers-forced-to-dump-the-produce-as-note-ban-turns-bumper-crop-worthless/story-q79Oaf8eGTLX0yaHXwkJLL.html>

††††††††††"Oh-nion: Farmers in crisis dump produce in markets instead of selling at 50 paise a kilo". *India Today*.<https://www.indiatoday.in/india/story/onion-prices-crash-india-crop-farmers-dumps-crop-mandi-359240-2016-12-23>

††††††††††"Demonetisation: At Gujarat protests, farmers dump milk, vegetables on road". *20 November 2016*.

§§§§§§§§§§"Half dividend, full fallacy: RBI implies Modi & Urjit Patel got demonetisation wrong".https://in.yahoo.com/?err=404&err_url=https%3a%2f%2fin.news.yahoo.com%2fhalf-dividend-full-fallacy-rbi-154100516.html

*****"About false promises".<https://indianexpress.com/article/opinion/columns/rbi-demonetisation-bad-loans-economy-5357208/>

††††††††††"2 die in queue to exchange banned notes at bank". *The Times of India*. 11 November 2016<https://timesofindia.indiatimes.com/india/2-die-in-country-wide-rush-to-junk-banned-notes/articleshow/55374158.cms>

††††††††††"Demonetization: Government not mourning over 100 deaths due to cash-crunch, says Opposition".<https://www.dnaindia.com/india/report-demonetization-government-not-mourning-over-100-deaths-due-to-cash-crunch-says-opposition-2280902>

§§§§§§§§§§"Around 105 died, but 'Twitter king' Modi didn't mention it: Lalu on demonetisation". *Indo-Asian News Service*.<https://www.hindustantimes.com/india-news/around-105-died-but-twitter-king-modi-didn-t-mention-it-lalu-on-demonetisation/story-XGSe6LIYLiKdTB0BBL4zJL.html>

- The tax collected due to launch of demonetization policy will be put to developmental activities in the country.
- Demonetization has driven the country towards a cashless society. Lakhs of the people even in remote rural areas have started resorting to use the cashless transactions. The move has promoted banking activities. Now even the small transactions have started going through banking channels and the small savings have turned into a huge national asset.
- The high rising price pattern and inflationary trends which the Indian economy was facing are taking a down turn making the living possible within low income group reach.

DEMERITS-BLOW TO ECONOMIC GROWTH AND INCONVENIENCE ALL AROUND

The very next day of announcing the demonetization, the BSE Sensex and NIFTY 50 stock indices fell over 6%. The severe cash shortages brought detrimental impact on the economy. People trying to exchange their bank notes had to stand in lengthy queues causing many deaths due to inconvenience and rush.

- The sudden announcement has made adverse impact on business and economy. Instead of a growing economy India has become a standstill and no growth economy. It is feared that a fall of 2-3% in the GDP growth will be recorded coming year.
- India is an agriculture based economy. Due to the cash crunch, the farmers especially small and marginal who largely depend on cash to buy seeds, fertilizers and to pay for sowing, borrowing water for irrigation and for other related agriculture equipments remained worst affected and could not complete the crop related activity.
- Since small branches of the banks were also not supplied with adequate cash within time of sowing season of the crop, farmers could not get their crop loans disbursed. This added to the woes of the farmers leading to a weak agriculture production the coming year.
- Real Estate sector came to a stand still and is still gasping for buyers of the constructed and half constructed inventory without buyers. This has resulted in poor cash flow leading to a poor demand.
- Demonetization has made the situation become chaotic. Tempers are running high among the masses as there is a delay in the circulation of new currency.
- Due to the inability to pay cash to poor daily wage workers, the small employers have stopped their business activity.
- The poor planning on the part of the government has also added to the woes of the common people with low incomes. The Rs.2000 currency note does not find many takers as it is difficult to get the balance back when you are buying daily needs like vegetables, milk, and bread or paying for petty expenses like bus fare. While rs.100 currency notes were not available in sufficient number, Rs.500 note arrived in the market very late.
- Demonetization is the 2 way sword in regard to incurring the public expenditure. On the one hand huge cost is to be incurred on printing the new currency and on the other hand managing the lakhs of crores of old currency volume has also become a big expenditure incurring item.
- Many Economists are of the view that Rs.2000 currency note will be much easier to hide and can be used to store black money in shorter space.

- Entire opposition has stood against demonetization and has called this decision a draconian law.

References

1. *India's Demonetisation Kills 100 People Apparently - This Is Not An Important Number*". Dec 8, 2016, 04:47am <https://www.forbes.com/sites/timworstall/2016/12/08/indias-demonetisation-kills-100-people-apparently-this-is-not-an-important-number/#3da81986237a>
2. *Withdrawal of Legal Tender Status for ₹ 500 and ₹ 1000 Notes: RBI Notice (Revised)*". Reserve Bank of India. 8 November 2016.
3. *Notes out of circulation*". *The Times of India*. 8 November 2016, <https://timesofindia.indiatimes.com/india/Rs-500-and-Rs-1000-notes-pulled-out-of-circulation-immediately-PM-Narendra-Modi/articleshow/55315473.cms?>
4. Saikia, Bijoy Sankar (18 November 2016). "Demonetisation may drag India behind China in GDP growth, rob fastest-growing", <https://economictimes.indiatimes.com/markets/stocks/news/demonetisation-to-drag-india-behind-china-in-gdp-growth-rob-fastest-growing-economy-tag/articleshow/55492970.cms>
5. Dutta, Prabash K. (30 August 2018). "Demonetisation: What India gained, and lost". *India Today*.
6. *India demonetisation failed to purge black money*". *Financial Times*. <https://www.ft.com/content/7dbe0e14-8d8a-11e7-a352-e46f43c5825d>
7. "India rupee: Illegal cash crackdown failed - bank report". *BBC News*. 30 August 2017. Retrieved 31 August 2017 – via www.bbc.com.
8. "Thanks to Demonetization and GST, India's GDP growth hit a 4-year low at 6.5 per cent". *India Today*. Retrieved 2 October 2018.
9. "Demonetisation debate in Parliament: Disaster, says Chidambaram; high cash economy corrupt, counters Jaitley: India, News - India Today". [Indiatoday.intoday.in](http://indiatoday.intoday.in).
10. Sinha, Smita (7 November 2017). "One year of note ban: The ultra-secret move that no one came to know for several months". *The Economic Times*, <https://economictimes.indiatimes.com/news/politics-and-nation/one-year-of-note-ban-the-ultra-secret-move-that-no-one-came-to-know-for-several-months/articleshow/61528334.cms>
11. "Demonetisation of Rs. 500 and Rs. 1000 notes: RBI explains". *The Hindu*. 8 November 2016. <https://www.thehindu.com/news/national/Demonetisation-of-Rs.-500-and-Rs.-1000-notes-RBI-explains/article16440296.ece>
12. *Demonetisation anniversary: Full text of Prime Minister Narendra Modi's speech from 8 November, 2016 - Firstpost*". www.firstpost.com
13. *17 November Government press release*"(PDF). Ministry of Finance, Government of India. Archived from the original(PDF)
14. "All note exchange stopped from today, PM Modi goes back on promise of hike after November 24". <https://indianexpress.com/article/india/india-news-india/pm-modi-said-exchange-limit-to-be-hiked-after-november-24-exchange-stopped-4393985/>
15. *Outlets that will accept Rs 1,000 and Rs 500 notes in next 72 hours*". *The Economic Times*. <https://economictimes.indiatimes.com/news/economy/policy/outlets-that-will-accept-rs-1000-and-rs-500-notes-in-next-72-hours/articleshow/55317768.cms>

16. "RBI removes limit on cash withdrawal, banks go back to pre-demonetisation era". *The Financial Express*. <https://www.financialexpress.com/india-news/rbi-removes-limit-on-cash-withdrawal-banks-go-back-to-pre-demonetisation-era/586375/>
17. ATMs – Non-dispensing of Old High Denomination Notes – Closure of operations". *Reserve Bank of India*. <https://rbi.org.in/Scripts/NotificationUser.aspx?Id=10683&Mode=0>
18. Cash withdrawal from ATMs – Enhancement of daily limits". *Reserve Bank of India*, <https://www.rbi.org.in/scripts/NotificationUser.aspx?Id=10807&Mode=0>
19. Goal of Demonetisation: Modi's Promise Vs Jaitley's Defence". <https://www.bloombergquint.com/business/rbi-annual-report-and-goal-of-demonetisation-modis-promise-versus-jaitleys-clarification#gs.vGF2qH55>
20. Why Were the Notes Scrapped? RBI Chief, Economic Affairs Secy Explain". *News 18*. <https://www.news18.com/news/india/why-were-the-notes-scrapped-rbi-chief-and-economic-affairs-secretary-explain-1309756.html>
21. Parmar, Beena (13 November 2016). "Despite Rs 4000-cap on money exchange, loophole allows multiple transactions". <https://www.hindustantimes.com/business-news/despite-rs-4000-cap-on-money-exchange-loophole-allows-multiple-transactions/story-lbw8xw5XCHvsS5DOawWB1O.html>
22. "Demonetisation: In Chennai, To beat cash limit, they send full teams to bank". <https://indianexpress.com/article/india/india-news-india/demonetisation-in-chennai-to-beat-cash-limit-they-send-full-teams-to-bank-4375951/>
23. Gold price recovers on renewed demand". *Hindustan Times*. <http://www.newindianexpress.com/business/2016/nov/10/gold-price-recovers-on-renewed-demand-1536940.html>
24. Netas using co-op banks for backdated FDs, DDs - *Times of India*". <https://timesofindia.indiatimes.com/city/mumbai/Netas-using-co-op-banks-for-backdated-FDs-DDs/articleshow/55467204.cms>
25. "Jewellers issue backdated invoices to clients - *The Economic Times*". <https://economictimes.indiatimes.com/markets/commodities/news/jewellers-issue-backdated-invoices-to-clients/articleshow/55349735.cms>
26. Rathi, Pranshu (29 November 2016). "Back-dated receipts used for Apple iPhone sales after demonetisation: Report". <https://www.ibtimes.co.in/back-dated-receipts-used-apple-iphone-sales-after-demonetisation-report-706095>
27. "Tiffin service to dental implants: All tried to beat system, swap old notes". <https://indianexpress.com/article/india/demonetisation-tiffin-service-to-dental-implants-all-tried-to-beat-system-swap-old-notes-income-tax-department-raids-4410874/>
28. "Rs 500/Rs 1000 demonetisation: Temple money from hundis not to come under scanner". <https://www.thenewsminute.com/article/rs-500rs-1000-demonetisation-temple-money-hundis-not-come-under-scanner-52701>
29. 13 Ways In Which Indians Will Convert Their Black Money Into White Even After Demonetisation". https://www.huffingtonpost.in/404/?error=not_found&url=%2F2016%2F11%2F13%2F13-ways-in-which-indians-will-convert-their-black-money-into-whi%2F
30. Damodaran, Harish (9 November 2016). "Are banks equipped to replace 2,300 crore pieces of Rs 500 and Rs 1,000 notes?". *The Indian*

- Express*.<https://indianexpress.com/article/opinion/web-edits/rs-500-rs-1000-notes-are-banks-equipped-to-replace-1874-crore-pieces-of-notes-4364746/>
31. *How Successful was Demonetisation? Four Takeaways From the RBI's Annual Report*". *The Wire*<https://thewire.in/economy/how-successful-was-demonetisation-four-takeaways-from-the-rbis-annual-report>
 32. *Currency in circulation slows down since May*".
 33. *Demonetization: With no cash on hand, 4 lakh trucks stranded on highways*". 14 November 2016<https://www.dnaindia.com/india/report-demonetization-with-no-cash-on-hand-4-lakh-trucks-stranded-on-highways-2273414>
 34. *"Toll tax suspended on national highways till Nov 11, banks open this weekend"*. *Hindustan Times*.<https://www.hindustantimes.com/india-news/toll-collection-suspended-across-the-country-till-nov-11-highways-ministry/story-1bAQIFhgp3R26ja4z9OdDK.html>
 35. *"Toll collection on all national highways suspended till December 2"*. www.businesstoday.in
 36. Chakravarty, Manas (3 January 2017). *"How much has demonetisation affected the stock market?"*. *LiveMint*.<https://www.livemint.com/Money/hRb1noUQV17fmP0o1GNQEJ/How-much-has-demonetisation-affected-the-stock-market.html>
 37. Mukundan, Anagha (1 June 2017). *Impact of Demonetisation on Indian Stock Market*. A P J Abdul Kalam Technological University. doi:10.13140/rg.2.2.24870.63042.
 38. Anoop, Patil; Parab, Narayan; Reddy, Y. V (2018). *"Analyzing the Impact of Demonetization on the Indian Stock Market: Sectoral Evidence using GARCH Model"*. *Australasian Accounting, Business and Finance Journal*. 12 (2): 104–116. doi:10.14453/aabf.v12i2.7. ISSN 1834-2000.
 39. Mukundan, Anagha (1 June 2017). *Impact of Demonetisation on Indian Stock Market*. A P J Abdul Kalam Technological University. doi:10.13140/rg.2.2.24870.63042.
 40. Correspondent, Special. *"Demonetisation hit economy: Jamir"*. *The Hindu*.<https://www.thehindu.com/news/national/other-states/Demonetisation-hit-economy-Jamir/article17349806.ec>
 41. Seth, Dilasha (6 December 2016). *"Slowdown due to demonetisation: PMI services shrinks in November after 17 months"*. *Business Standard India – via Business Standard*.
 41. 5 Bleak Numbers That Show Demonetisation Impact On The Economy".https://www.huffingtonpost.in/404/?error=not_found&url=%2F2017%2F01%2F03%2Ffive-worrying-numbers-that-show-demonetisation-impact-on-economy%2F
 42. *"Demonetisation impact: Three sets of numbers tell us how Modi's gamble has slowed the economy"*. 3 January 2017.
 43. *"About false promises"*.<https://indianexpress.com/article/opinion/columns/rbi-demonetisation-bad-loans-economy-5357208/>
 44. *"2 die in queue to exchange banned notes at bank"*. *The Times of India*. 11 November 2016<https://timesofindia.indiatimes.com/india/2-die-in-country-wide-rush-to-junk-banned-notes/articleshow/55374158.cms>
 45. *"Demonetization: Government not mourning over 100 deaths due to cash-crunch, says Opposition"*<https://www.dnaindia.com/india/report-demonetization-government-not-mourning-over-100-deaths-due-to-cash-crunch-says-opposition-2280902>

46. "Around 105 died, but 'Twitter king' Modi didn't mention it: Lalu on demonetisation". *Indo-Asian News Service*.<https://www.hindustantimes.com/india-news/around-105-died-but-twitter-king-modi-didn-t-mention-it-lalu-on-demonetisation/story-XGSe6LIYLiKdTBoBBL4zJL.html>
47. "No official report on deaths due to demonetisation: Government". *The New Indian Express*.<http://www.newindianexpress.com/nation/2017/mar/17/no-official-report-on-deaths-due-to-demonetisation-government-1582474.html>
48. "PILs in Supreme Court against making Rs 500, Rs 1000 notes illegal". *India Today*. 10 November 2016
49. "Why Were the Notes Scrapped? RBI Chief, Economic Affairs Secy Explain". *News 18*.<https://www.news18.com/news/india/why-were-the-notes-scrapped-rbi-chief-and-economic-affairs-secretary-explain-1309756.html>
50. Parmar, Beena (13 November 2016). "Despite Rs 4000-cap on money exchange, loophole allows multiple transactions".<https://www.hindustantimes.com/business-news/despite-rs-4000-cap-on-money-exchange-loophole-allows-multiple-transactions/story-lbw8xw5XCHvsS5DOawWB1O.html>
51. "Demonetisation: In Chennai, To beat cash limit, they send full teams to bank".<https://indianexpress.com/article/india/india-news-india/demonetisation-in-chennai-to-beat-cash-limit-they-send-full-teams-to-bank-4375951/>
52. "Gold price recovers on renewed demand". *Hindustan Times*.<http://www.newindianexpress.com/business/2016/nov/10/gold-price-recovers-on-renewed-demand-1536940.html>
53. "Netas using co-op banks for backdated FDs, DDs - Times of India".<https://timesofindia.indiatimes.com/city/mumbai/Netas-using-co-op-banks-for-backdated-FDs-DDs/articleshow/55467204.cms>
54. "Jewellers issue backdated invoices to clients - The Economic Times".<https://economictimes.indiatimes.com/markets/commodities/news/jewellers-issue-backdated-invoices-to-clients/articleshow/55349735.cms>
55. "Rathi, Pranshu (29 November 2016). "Back-dated receipts used for Apple iPhone sales after demonetisation: Report".<https://www.ibtimes.co.in/back-dated-receipts-used-apple-iphone-sales-after-demonetisation-report-706095>
56. "Tiffin service to dental implants: All tried to beat system, swap old notes".<https://indianexpress.com/article/india/demonetisation-tiffin-service-to-dental-implants-all-tried-to-beat-system-swap-old-notes-income-tax-department-raids-4410874/>

An Empirical Economic Analysis of Rural Infrastructure and Living Conditions of the People in Rural Areas of Tamil Nadu State

R. Sampath*

D. Murugan**

Abstract

The availability of adequate infrastructure facilities is vital for the acceleration of development of a country (Lall 1999). It largely contributes to the development and living conditions of the people in the rural areas (Lall 2006). One many notice that rural infrastructure not only provides the linkages to the rural areas but also it offers access to market, health care services, financial services and communication (Rajeev 2007) . As a result, the living conditions of the people in the rural areas have been improving (Richa Sing 2000). In this context, this article has brought out the economic impact of rural infrastructure on the living conditions of the people in Cuddalore and Mangalore blocks of Cuddalore district in Tamil Nadu State.

Keywords: Poverty - Alleviation, Social Infrastructure, Economic Infrastructure, Farm Income, Access to Education

I. Introduction and background

In any economy, the socio-economic components of infrastructure contribute to the standard of living of rural households (Simon and Hine 1978). Further, development of transport and communication infrastructure enhances the mobility of people and also results in reduction in cost and time. It is noticed that the many developing countries lack well developed infrastructure and that hampers economic growth in the rural areas (Bhulia1999). Rural infrastructural is crucial for agriculture, agro-industries and overall economic development in rural areas. It also provides basic amenities that improve the quality of life (Suddin and Hossian 1990). However, the development of infrastructure in rural sector involves huge initial investments long gestation period high incremental capital output ratio, high risk and low rate or returns on investments (Peter and Thorat 2000).

Infrastructure is an umbrella term for many activities referred to social over head capital by development economists as Arthur Lewis, Rosen Stein-Rodan, RagnerNurkse and Albert Hirschman. (Lewis (1955); Rosen Stein-Rodan (1943) and Hirschman (1958)). One may notice that adequate infrastructure raises productivity and lowers cost of production but at the same time, the development in infrastructure has to accommodate the economic growth. It is evident that the nexus between infrastructure development and economic development is well established and increases in the stock of infrastructure are closely associated with Gross Domestic Product (GDP) across all the countries (Morris & Morris 2003). In the theory of "Stages of Growth", Rostow has emphasised much the social overhead capital, especially development of transport and communication as one of the main pre-conditions for take-off (Rostow, 1960).

*Assistant Professor, Department of Economics, ThiruKolanjiappar Govt. Arts College, (Grade 1) Virudhachalam, (Deputed from Annamalai University)

**Assistant Professor, Department of Economics, Gnanambigai Government Arts College for Women, Mayiladuthurai (Deputed from Annamalai University)

It is clear that the development of infrastructure and availability of infrastructure determine the standard of living of the people in the rural areas. It is also noticed that there a number of studies on rural infrastructure and economic development. See for example: (Rao et al. 2001; Foster et al 2004; Foster and Carvan 2004 ; Singh 2004 and Ayinde et al., 2014), with this background, this research study explores the impact of rural infrastructure on household living conditions of the people in Cuddalore and Mangalore blocks of Tamil Nadu State.

II. Objectives

1. To analyse the variation in occupational distribution between infrastructurally most developed blocks and least developed blocks in the study region.
2. To explore the variation in income distribution between infrastructurally most developed blocks and least developed blocks in the study region.

III. Methodology

This study is based on primary data as well as secondary data. As far the as primary data are concerned, they have been collected from the respondents of the study region. It is related to social and economic infrastructure components in the study region. The secondary data have been collected from Cuddalore District Statistical Office and they are related to indicators of economic infrastructure development in the Cuddalore and Mangalore blocks of Cuddalore district. With regard to sampling design of the study, this study has adopted multistage stratified random sampling method. In the first stage, Cuddalore district is selected and at the second stage, Cuddalore block and Mangalore block are selected. The rationale behind the selection of these two blocks is that Cuddalore block is with a well-developed infrastructure and Mangalore block is underdeveloped infrastructure.

Further, the sample collection is involved in different stages. In the first stage, the village panchayat president and office bearers of village panchayat have been interviewed so as to elicit information regarding village infrastructure components. In the next stage, the interview would involve collection of information relating to living conditions, livelihood development and socio economic conditions of the respondents in the study region. In the next stage, four villages were selected on the basis of well-developed infrastructure and another village was selected on the basis of less infrastructure development from the selected two blocks. Further, at the final stage, 150 respondents from each of the blocks are selected for the present study. However, the total sample size of the study is 300.

IV. Framework of Analysis

To analyze the variation in the impact of infrastructural development on the living conditions of rural households, two -way ANOVA model has been adopted.

V. Results and Discussion

This section presents the variation in living conditions of the respondents between most developed block and the least developed block. Further, the variation in living conditions are discussed in terms of ownership of the house, electrification of the house occupational distribution, sources of income of the selected households, income distribution of the sample households, loan borrowed from formal sources and informal sources, variation in school enrollment of the children in the two blocks, treatment-seeking behavior in primary health centre and private hospital, schooling facilities available in the blocks and variation in household expenditure between two blocks viz., infrastructurally the most developed and the least developed blocks.

Table – 1: Ownership of House

Infrastructural Development	Owned	Rented	Total
Most Developed	149 (99.3)	1 (0.7)	150 (100)
Least Developed	148 (98.7)	2 (1.3)	150 (100)
Total	297 (99.0)	3 (1.0)	300 (100)

Source: Computed

Figures in parentheses indicate percentage

Table-1 exhibits the ownership status of the house of respondents in the study region. It is noticed that out of the total respondents about 99.0% live in own houses and the remaining 1.00 % live in rental houses. Regarding the housing condition of the respondents in the most developed block, 99.3% of them live in own house and the remaining 0.7% of them live in rental houses. As far as the least developed block is concerned, about 98.7% of the respondents have own houses and the remaining 1.3% of the respondents live in rental houses. It could be argued that in the most developed block, a major portion of the respondents live in own houses which is due to their higher income and standard of living as compared to the least developed block in Cuddalore District.

Table – 2: Occupational Status of the Respondents

Infrastructural Development	Agriculture	Agricultural labour	Business	Service	Others	Total
Most Developed	12 (8.0)	13 (8.7)	41 (27.3)	35 (23.3)	49 (32.7)	150 (100)
Least Developed	44 (29.3)	31 (20.7)	14 (9.3)	13 (8.7)	48 (32.0)	150 (100)
Total	56 (18.7)	44 (14.7)	55 (18.3)	48 (16.0)	97 (32.3)	300 (100)

Source: Computed

Figures in parentheses indicate percentage

Table-2 exhibits the classification of the respondents according to their occupational distribution. It is noticed that out of the total respondents, about 32.3% of them have come under the category of the occupation of others which encompasses various rural non-farm occupation like, dairy business, petty shop, mate weaving, coir making, tea shop, and other food items making. It is followed the occupational category of agriculture at 18.7%, 18.3% of the respondents are found under the category of business. It includes Tiffin centre, hotel business, money lending, grocery shop and other shops. Further, about 16.00% of them are under the category of service and the remaining 14.7% of them are noticed as agricultural labour. In most developed block, a major portion of the respondents have come under the category of others at 32.7% and it includes various non-farm occupations in the study region. It is followed by business at 27.3% which include restaurant business, dairy, petty shop, mate-selling, and others. In addition, it may be observed that 23.3% of the respondents are involved in services who are employed in

public sector and private sector enterprises and it is followed by agricultural labour at 8.7%. The least 8 % is found to be agriculturists. In the case of the least developed block, a major portion is found under the occupational category of others at 32.0% as found in the most developed block. It is followed by the occupational category of agriculture at 29.3%, agricultural labour at 20.7%, business at 9.3% and the least is found under service at 8.7%. It could be brought to the light from the above discussion that in the most developed block, a major portion of the respondents are found to be engaged in business, service and others as compared to the least developed block. It shows that because of the infrastructural development, there is variation in occupational distribution among the selected respondents between infrastructurally the most developed block and the least developed block in Cuddaore district.

Table – 3: Electrification Status of Sample Households

Infrastructural Development	Electrified	One light program	Total
Most Developed	145 (96.7)	5 (3.3)	150 (100)
Least Developed	88 (58.7)	62 (41.3)	150 (100)
Total	233 (77.7)	67 (22.3)	300 (100)

Source: Computed

Figures in parentheses indicate percentage

Table-3 shows the variation in electrification of sample households between the two blocks viz., infrastructurally most developed block and infrastructurally least developed block in the selected district. It is seen that out of the total selected sample households, 77.7% of the households are ownly electrified by the respondents and the remaining 22.3% of the households are found under one light programme. Regarding the most developed block, it may be observed that 96.7% of the sample households are ownly electrified and housing conditions are also found to the highly encouraging and it is followed by the least amount of sample households at 3.3%, which come under the category of one light programme. With regard to the least developed block, it is found that 58.7% of the households are electrified by the respondents and the remaining 41.3% of the sample households are electrified under the one light programme.

However, while making a comparison between the most developed block and least developed block in terms of electrification status of the sample households, in the most developed block the electrification status of the sample households are highly developed but in the case of the least developed block the electrification conditions of the house hold has to improve. It is due to their Occupational status and low level of income which make the electrification condition very discouraging.

Table – 4: Variation in Sources of Income between The Most Developed Block and The Least Developed Block

Infrastructural Development	Agriculture	Wages	Business	Salaries	Others	Total
Most Developed Block	255462.42 (19.0)	184621.1 4 (13.7)	286245.4 2 (21.3)	355426.2 4 (26.4)	264246.2 1 (19.6)	1346001. 4 (100)
Least Developed Block	163008.14 (19.2)	115324.4 2 (13.6)	140242.1 5 (16.5)	254622.5 3 (30.0)	176215.6 2 (20.7)	849412.9 (100)
Total	4184706 (50.2)	299945.6 (3.6)	426487.6 (5.1)	610048.8 (7.3)	2818661. 8 (33.8)	8339849. 8 (100)

Source: Computed

Figures in parentheses indicate percentage

Table-4 exhibits variation in sources of income between the most developed block and the least developed block. It could be inferred from the above table that out of the total income, 50.2% is derived from agriculture, 33.8% from enterprise activities and other non-farm activities in the rural areas. Further, 7.3% of the income is from salary, 5.1% from business activities viz., cloth business, rice business, vegetable and fruit vending and edible oil sale, and the least 3.6% of the income is from wages. It is seen that in the developed block, 26.4% of the income is from salaries which is the major portion. It is followed by the income from business which is found at 21.3%, 19.6% of the income from others viz., fruits and vegetable vending, cool drink making, food items and other non-farm activities in the rural areas. Further, 19.0% of the income is found from agriculture and the remaining 13.7% is from wages. However, in the developed block a major portion of the income is derived from salaries. Regarding the least developed block, a major portion 30.0% is derived from salaries followed by 20.7% from others, 19.2% from agriculture, 16.5% from business and the least 13.6% from wages. By and large, it could be inferred from the results that there is a variation in the sources of income between the most developed block and the least developed block.

Table – 5: Classification of Respondents according to Income Distribution

Infrastructural Development	Up to 50,000	50,000 to 1,00,000	1,00,000 to 2,00,000	2,00,000 to 3,00,000	Above 3,00,000	Total
Most Developed	10 (6.7)	7 (4.7)	39 (26.0)	41 (27.3)	53 (35.3)	150 (100)
Least Developed	75 (50.0)	37 (24.7)	17 (11.3)	15 (10.0)	6 (4.0)	150 (100)
Total	85 (28.3)	44 (14.7)	56 (18.7)	56 (18.7)	59 (19.7)	300 (100)

Source: Computed

Figures in parentheses indicate percentage

Table-5 exhibits the variation in the magnitude of income- distribution between the most developed block and the least developed block in Cuddalore district. It could be observed that out of the total respondents, 28.3% of the respondents have come under the category of income up to Rs. 50,000, followed by 19.7% who have recorded their income above Rs. 3,00,000, 18.7% of them has the income range from Rs.1,00,000 to 2,00,000, and the same trend has been observed in the income category between Rs.2,00,000 and 3,00,00. Further, the least 14.7% of them has come under the income category between 50,000 to 1,00,000. However, it could be observed from the results that out of the total respondents, a major portion of the respondents have acquired income only the category up to 50,000. with regard to the most developed block, it may be observed that a higher magnitude that is 35.3% of the respondents have acquired income above Rs. 3,00,000, followed by 27.3% who have recorded the income level between 2,00,000 to 3,00,000, 26.0% of them have come under the income category between 1,00,000 to 2,00,000, 6.7% of them are under the income category up to 50,000 and the lowest 4.7% of them have recorded the income level between 50,000 to 1,00,000.

As far as the least developed block is concerned, out of the total respondents in the block, 50.0% of them are under income category up to 50,000 followed by 24.7% who have recorded the level of income between 50,000 to 1,00,000, 11.3% of them are under the income category between 1,00,000 and 2,00,000, 10% of them acquired income between 2,00,000 and 3,00,000 and the remaining 4% of them are under the income level above 3,00,000.

In this context, it could be inferred from the results that while making a comparison between infrastructurally most developed block viz., Cuddalore block and infrastructurally least developed block, a major portion of the respondents in the developed block have the income level above 3,00,000. It shows that access to infrastructural facilities, like, access to market, the level of education, access to health care services and variation in occupation have led to a higher amount of income in the developed block. Regarding the developed block, the major socio-economic infrastructural development is relatively low which hamper the development of the block resultant low level of income has been noticed in the infrastructurally less developed block.

Table – 6: Borrowing of the Sample Households from Formal and Informal Sources

Infrastructural Development	Formal Sources	Informal Sources	Total
Most Developed	48441 (46.2)	56426 (53.8)	104867 (100)
Least Developed	29104 (48.2)	31263 (51.8)	60367 (100)
Total	77545 (46.9)	87689 (53.1)	165234 (100)

Source: Computed

Figures parentheses indicate percentage

Table-6 depicts the variation in the magnitude of loan borrowed from formal and informal sources viz., institutional sources and non-institutional sources by the respondents between infrastructurally most developed blocks and infrastructurally least developed blocks in

Cuddalore District. It is noticed that out of the total loan borrowed by the respondents, 53.1% of the loan has been borrowed from informal sources and 46.9% of the loan is borrowed from formal sources. It shows that in the provision of credit still the informal sources recorded the first place which includes mainly the money lenders who lends money at exorbitantly high rate of interest to the farmers and other purposes in the rural areas. In the most developed block, it is noticed that out of the total loan borrowed by the respondents a major portion has been borrowed from non-institutional sources viz., money lenders, relatives and friends at higher rate of interest and the informal source constitutes 53.8%. The remaining 46.2% of the loan is borrowed from formal banking institutions. With regard to the least developed block, it could be brought to the light that 51.8% of the loan has been borrowed from non-institutional sources which occupied a major portion. It shows that the private sources of provision of loans play a vital role in fulfilling the credit needs in rural areas and the remaining 48.2% of the loan has been borrowed from formal institutional sources. By and large, it could be deduced from the results that both from infrastructurally developed block and least developed blocks, a major portion of the respondents are still dependent on informal sources for their borrowing and the provision of formal financial services should be improved in rural areas and it should go a long way.

Table – 7: Households Expenditure on Food and Non Food Items

Infrastructural Development	Food item	Non food	Household expenditure
Most Developed	61823 (54.4)	51836 (45.6)	113659 (100)
Least Developed	83422 (59.8)	56104 (40.2)	139526 (100)
Total	145245 (57.4)	107940 (42.6)	253185.0 (100)

Source: Computed

Figures in parentheses indicate percentage

Table-7 shows the variation between food expenditure and non-food expenditure by the selected sample households between infrastructurally developed block and the least developed block in Cuddalore District. It may be seen that out of the total household expenditure, 57.4% has been incurred for food items by the respondents and the remaining 42.6% is incurred on non-food items. It could be attributed to the fact that the expenditure on food items includes expenditure on buying grains, pulses and cereals which attracts a higher amount of expenditure among the respondents in the study region. Whereas the expenditure on non-food items includes the expenditure on medicine, health care services and miscellaneous expenditure which involves comparatively less expenditure among the selected households in aggregation. Regarding the most developed block, the expenditure on food items has attracted a higher magnitude of expenditure at 54.4% and the remaining 45.6% of the expenditure is incurred by the respondents on non-food items. With regard to the least developed block, about 59.8% of the expenditure has been incurred on food items and the least 40.2% has been spent on non-food items in the study region. Making a comparison between the most developed block and the least developed block, the expenditure on food items has attracted a higher amount of expenditure as compared to

non-food items in the study region. It may also be observed from the study that even in the rural areas the expenditure on food items has been on increase.

Table – 8: Variation in Treatment-Seeking Behavior in the Most Developed Block and the Least Developed Block

Infrastructural Development	Primary Health Centre	Private Hospital	Total
Most developed block	50 (33.3)	100 (66.7)	150 (100)
Least developed block	80 (53.3)	70 (46.7)	150 (100)
Total	130 (43.3)	170 (56.7)	300 (100)

Source: Computed

Figures in parentheses indicate percentage

Table-8 exhibits the variation in treatment-seeking behavior in primary health centre and private hospital between Mangalore block and Cuddalore block viz., infrastructurally developed block and the least developed block in Cuddalore District. It is discernible from the results that out of the total respondents, about 56.7% are taking treatment in private hospitals, and the remaining 43.3% of them are taking treatment in the primary health centres. In the case of the developed block, it could be observed that a major portion of the respondents, that is 66.7%, of them are taking treatment in private hospitals and the remaining 33.3% of them are seeking primary health centres for treatment. By and large, it could be inferred from the results that the level of income, nature of occupation and access to health care services make the respondents to take private hospitals rather than the primary health care centers. It also shows that the health care services provided in the primary care centers should be improved in the study region.

V. Conclusion

- i. Regarding the living conditions, it may be observed that in the infrastructurally less developed block, most of the respondents rely on agriculture and working as agricultural labourer as compared to the developed block.
- ii. With regard to sources of income, it could be inferred from the results that the income derived from salaries, business and other sources are high among the respondents in the infrastructurally most developed block as compared to the least developed block in the study region.
- iii. In the case of income distribution of the respondents, it is inferred that in the most developed block, a major portion of selected rural household has more income from different sources as compared to the less developed block where the income distribution is not encouraging.
- iv. Regarding the borrowing of the respondents, the respondents in the infrastructurally developed block are able borrow a major portion from institutional sources as compared to the least developed block where the borrowing for farm and non-farm activities are higher from informal sources.

- v. In the case of household expenditure on food and non food, it could be brought out from the results that expenditure on both food and non-food items are very high in the least developed block as compared to the most developed block.
- vi. Regarding the health component, most of the respondents in the developed block undergo health services in private hospitals. As against this, in the less developed block, a major portion of the respondents is using primary health centres for treatment.

References

- Ahmed Raisuddin & Mahabub Hossain (1990). "Development impact of Rural Infrastructure in Bangladesh", IFPRI *Research Report* 83, Washington, D.C.
- Bansal, A.N and B.R. Patil (1979), *Socio-economic Impact of Roads on Village Development*, National Council of Applied Economic Policy Research, New Delhi.
- Bhatia, M.S., (1999), "Rural Infrastructure and Growth in Agriculture", *Economic and Political Weekly*, Vol. 34, No.13, March 27-April 2.
- Bhatia, M.S., (1999). "Rural Infrastructure and Growth in Agriculture", *Economic and Political Weekly*, 34(13): 43-48.
- Binswanger, Hans P.; K. Deininger and G. Feder (1993), "Agricultural Land Relations in Developing World", *American Journal of Agricultural Economics*, Vol.75, pp. 1242-1248.
- Ellis, Simon D. and John L. Hine, (1978). *The Provision of Rural Transport Services: Approach paper*, Sub-Saharan Africa Transport Policy Program Working Paper, 37, April.
- Esfahani, Hadi Salehi and María Teresa Ramírez (2003). "Institutions, Infrastructure and Economic Growth", *Journal of Development Economics*, 70: 443-77.
- Fan, Shenggen, Peter B.R. Hazell and Sukhdeo Thorat. (2000). "Government Spending, Growth and Poverty in Rural India", *American Journal of Agricultural Economics*, 82(4): 1038-51.
- Fan, Shenggen, Peter B.R. Hazell and T. Haque (1998), *Role of Infrastructure in Production Growth and Poverty Reduction in Indian Rainfed Agriculture*, Project Report to the Indian Council for Agricultural Research and the World Bank, International Food Policy Research Institute, Washington, D.C., U.S.A.
- Ghosh, B and Prabir De. (1998). "Role of Infrastructure in Regional Development, A Study over the Plan Period", *Economic and Political Weekly*, 47(48): 3039-3048.
- Government of India (1981), *Sixth Five Year Plan*, Planning Commission, New Delhi.
- Government of India (1992), *Eighth Five Year Plan*, Planning Commission, New Delhi.
- Government of India (1995), 'Budget Speech of the Union Finance Minister', Ministry of Finance, New Delhi.
- Government of India (2007). *Economic Survey 2006 – 07*, Ministry of Finance, New Delhi.
- Greenstein Shane and Pablo Spiller (1995). "Modern Telecommunications Infrastructure and Economic Activity: An Empirical Investigation," *Industrial and Corporate Change*. 4: 647-665.
- Gulati, S.C. (1997), "Dimensions of Inter-District Disparities", *Indian Journal of Regional Science*, Vol.9, No.2.
- Hirschman, Albert O. (1958), *The Strategy of Economic Development*, Yale University Press, New Haven, CT.

- Hulten, Charles, R., EsraBennathan and Sylaja Srinivasan (2005). "Infrastructure, Externalities, and Economic Development: A Study of Indian Manufacturing Industry", Mimeo, World Bank.
- Jahan, Selim and Robert McCleery (2005): "Making Infrastructure Work for the poor", United nations Development Programme, New York, October.
- Johnston (Eds) (1967), *Agricultural Development and Economic Growth*, Cornell University Press, Ithaca, New York.
- Kim, E (1998). "Economic gain and loss from public infrastructure investment", *Growth and Change, A Journal of Urban and Regional Policy*, 29, (4):445-469.
- Lall, S.V. (1999). "The Role of Public Infrastructure Investment in Regional Development: Experience of Indian States", *Economic and Political Weekly*, 24(12): 717-725.
- Lall, S.V. (2006). "Infrastructure and regional growth, growth dynamics and policy relevance for India", *Annals of Regional Science* 41, 581-599.
- Lall, Somik V. (1999), "The Role of Public Infrastructure Investments in Regional Development - Experience of Indian States", *Economic and Political Weekly*, Vol. 34, No.12, March 20-26.
- Lewis, W. Arthur (1955), *The Theory of Economic Growth*, Allen Unwin, London.
- Majumdar, R. (2002), *Infrastructure and Economic Development: A Regional Analysis*, CSRD/SSS, Jawaharlal Nehru University, New Delhi.
- Meenakshi Rajeev (2007). "Ensuring Rural Infrastructure in India: Role of Rural Infrastructure Development fund", Institute for Social and Economic Change, Bangalore – 72.
- Minten, Bart (1999). "Infrastructure, market access, and agricultural prices: Evidence from Madagascar", MSSD Discussion paper, 26, International Food Policy Research Institute, Washington, D.C.: IFPRI.
- Mitra, A. (1999). "Total Factor Productivity Growth and Technical Efficiency in Indian Industries: A Study Based on Panel Data for 15 Major States", Working Paper, 203, 99, Institute of Economic Growth, Delhi.
- Morris, A. A. and S. Morris, (2003). *Rural Infrastructure Development Fund: A Review*, in Morris. S (ed.).
- Morrison C.J. and Schwartz A.E. (1996). "State Infrastructure and Productive Performance", *American Economic Review*, 86(5): 1095-1111.
- Narayanamoorthy and Munir A Hanjara (2006). "Rural Infrastructure and Agricultural Output linkages: A study of 256 Indian Districts", *Indian Journal of Agricultural Economics*, 61(3), July- September: 444-459.
- National Bank for Agriculture and Rural Development (NABARD) (2004), *Infrastructure for Agriculture and Rural Development-An Impact Assessment of Investments in Rural Roads and Bridges under RIDF*, Mumbai.
- National Bank for Agriculture and Rural Development (NABARD) (2006), *Annual Report-2005-06*, Mumbai.
- National Bank for Applied Economic Research, (2006). "India Rural Infrastructure Report", New Delhi.
- Olagunju, F.I, Ayinde, O., Adewumi, M.O.andAdesiji, G.B (2012). "Effect of Rural Roads and Marketing Infrastructure On Income Household In Osun State–Implications For Sustainable Development", *World Rural Observation*, 4(2): 22-30.

- Ostrom, Elinor, Larry Schroeder and Susan Wynne, (1993), *Institutional Incentives and Sustainable Development- Infrastructure Policies in Perspective*, Westview Press, Boulder, CO.
- Prabha, Goswami Kishor and Chatterjee Bani (2009). "Impact of Infrastructure and Technology on Agricultural Productivity in Uttar Pradesh", *Agricultural Economics Research Review*, 22, (1): Jan- June.
- Richa Singh (2000). "Rural Infrastructure, Agricultural Development and Poverty in India: An Inter-State Study", *Journal of Rural Development*, 23(1): 31-57
- Roller. L.H and Waverman. L (2001). "Telecommunications Infrastructure and Economic Development: A Simultaneous Approach", *American Economic Review*, 91(4):909-923.
- Rosenstein-Rodan, Paul, N. (1943), "Problems of Industrialisation of Eastern and South Eastern Europe", *The Economic Journal*, Vol.53, June, pp. 202-211.
- Rostow, W.W. (1960), *The Stages of Economic Growth: A Non-Communist Manifesto*, Cambridge University Press, Cambridge.
- Simon D. Ellis and John L.Hine (1998) "The Provision of Rural Transport Services", African Region, The World Bank.
- Shiladitya C, Tyrell D, Colandavelu N, and Brahm P (2004). "Scaling-Up Poverty Reduction Potential of Infrastructure Projects: Lessons from the Asia-Pacific Region", *Poverty and Social Development Papers*, ADB, Philippines.
- Straub, S., C. Vellutini and M. Warlters. (2008). "Infrastructure and Economic Growth in East Asia", *Policy Research Working Paper*, 4589, World Bank.
- Sudhakar Rao, Y. Gangi Reddy and R.Murugesan, (2001). "Rural Infrastructure and welfare of the poor," Research Report series 29, NIRD, Hyderabad, December.
- Thorat, Sukhadeo and Smita Sirohi (2002), 'Rural Infrastructure' 'State of Indian Farmer: A Millennium Study', Ministry of Agriculture, Government of India, New Delhi.
- Tsuneaki Yoshida (2000). "Japan's Experience in Infrastructure Development and Development Cooperation", *JIBC Review*, 3, Dec: 62-92.
- Viven Foster, Wellenius and Malamberg Calvo, (2004). "Private Provision of Rural Infrastructure Services: Competing for Subsidies," World Bank Policy Research Working Paper, 3365, August.
- Wharton, Clifton R. Jr, (1967), "The Infrastructure for Agricultural Growth", in Herman J. Southworth and Bruce F.
- World Bank (1994). World Development Report, Oxford University Press.
- World Bank (1997), *Rural Development: Vision to Action: A Sector Strategy*, The World Bank, Washington, D.C., U.S.A.
- World Bank (2002). "Rural Electrification and Development in the Philippines: Measuring the Social and Economic Benefits", ESMAP paper, 255, Washington.
- World Bank, (1994), *World Development Report: Infrastructure for Development*, Oxford University Press, New York.
- World Bank, (1994): "World Development Report: Infrastructure for Development", Oxford University Press, New York.
- Thorat, Sukhadeo and Smita Sirohi (2002). "Rural Infrastructure" "State of Indian Farmer: A Millennium Study", Ministry of Agriculture, Government of India, New Delhi.

Human Resource Accounting – A Conceptual Framework

Amrinder Singh Sandhu*

Human resources of any organisation have been one of the most important resources since time immemorial. But with the advent of corporate sector, where the ownership is segregated from the management part, human resources hold even more importance. Therefore, human resources have become a lot more important than ever before. The accounting practices to report the same are very much limited or just have been to a footnote. Though a lot of theoretical framework is available for the same. This paper tends to explain the various practices and the framework of Human Resource Accounting in a holistic manner. The various formulae available for calculating the monetary value of the human resources are studied in thorough detail.

Keywords: *Human Resource Accounting (HRA), Human Resources, HR Planning, Methods*

Introduction

As the accepted norms goes about five Ms of management namely- men, machinery, methods, money and materials. In fact, among these five only men or the manpower is the active element that can put to use the other four that are dormant in nature, which cannot function on their own. Therefore, manpower has to be kept intact and better looked after. With the advent of capital intensive techniques, the role of human resources cannot be demeaned as such. Giving respect and monetary rewards has been an age long practice, for recognising the efficient men. But the representation of human resources in monetary terms was instituted pretty much later. The oldest of such practice was recorded in 1691, when an effort was made by Sir William Petty to value human resources in monetary terms. He regarded labour as “father of wealth.” Thereafter, such efforts were made in 1853 and 1883 by William Far and Earnest Engle respectively. This was an era when there was no or less mechanisation of industrial operations. But the real development took place only after 1960s. This was an era when modern school of thought behavioural scientists criticised the conventional accounting practices for not valuing the human resources in true sense. Thereafter, many efforts were made and models were developed of accounting for human resources.

From accounting point of view, traditionally, cost on human resources is recorded in the books of accounts as revenue expenditure in income statement unlike the physical assets that find place in balance sheet. The accounting aspect of human resources includes, valuation of human resources, recording such valuations in books of accounts and disclosure practices in annual reports or so.

Undoubtedly, many psychological theories were developed on motivation, performance, organisational behaviour, interpersonal behaviour and so on, but accounting part was mostly lagging behind. As stated earlier beginning with 1960s decade many studies were conducted and models were developed by Schultz (1960), Pyle (1967), Flamholtz (1971, 1972 and 1975), Lev and Schwartz (1971), Jaggi and Lau (1974) etc. These models were of such a nature that concrete methods were developed to value human resources just

*Assistant Professor, Department of Commerce, Bhag Singh Khalsa College for Women, Kala Tibba, Abohar (Punjab)

like physical assets. The basic tenet on which such models rested (discussed under the heading Conceptual Framework) was the expenditure incurred on human resources in terms of hiring acquiring, hiring and training.

The buck does not stop here only, in fact other aspects like internal promotions, internal transfers, merit rating, job evaluation etc. also add to the value of human resources and accounting part would be helpful in ascertaining overall value as well. After having invested in human resources to such an extent and fairly over a period of time, the employees would of course feel affinity with the organisation. Managing such a vast work force ranging from skilled to unskilled and from highly technical to non technical, the accounting would be more precise way of recording the human resources.

The blame cannot be put on practices only that did not advocate the accounting for the human resources because an "unpredictable asset" would be a difficult to account for unlike the physical assets, the performance of which can be predicted at least. But at the same time accounting would not be just bringing human resources in terms of money or quantify them, but also that a development of an overall system that would support its development at the same time. The overall impact of HRA would be changed organisational structures, production pattern and role of top management.

Prior Studies

Many past studies focussed on the development of HRA thought. Liao et al (2006) tried to bring out the impact of human resource training has been directly linked with the capital formation. There have also been evidences of human resource investment contribution to the building up the intangible value to the business. Frederiksen and Westphalen (1998) focussed their research at macro level in terms of the changes taking place due to human resource accounting in production patterns, organisational structures and employment patterns and at the roles of governments, enterprises and individuals. Their study also observed the transitions or effects at micro levels due to human resource accounting in terms of developing a management tool internally and externally profiling the enterprise/organisation. Kodwani and Tiwari (2007) emphasised on recognition of time and procedure of recognising human resources. As evaluation of financial statements boosts the morale of company if in greens, in the same the evaluation of human resources boosts the morale of employees. The practical aspect of charging the human resources to income statement or profit and loss account, in terms of amortisation or depreciation apart from recording these in balance sheet. Veltri and Silvestri (2012) laid emphasis on intellectual capital in terms of creating value for the firm. The relationship between accounting measures such as book value and earnings of the firm were studied in observing the future profitability accompanied by intellectual capital of Italian Companies. One of the findings brought by them indicated that investors attached more relevance to human capital efficiency than to structural capital efficiency. Hossain et al (2015) brought out the basics of human resource accounting in terms of concepts and formulae to measure the human resources. Both traditional and non traditional mechanisms have been studied to value the human resources.

Conceptual Framework

As discussed earlier for valuation purposes three things to be considered are: valuation of human resources, recording the same in the books of accounts and disclosure of such information to the stakeholders as such. In this section of the paper the concepts and

valuation models are discussed in regard to human resources for valuation purposes. Following are a few models that are popular for the purposes:

- Historical Cost Model
- Replacement Cost Model
- Opportunity Cost Model
- Standard Cost Model
- Present Value Model
- Net Benefit Model

Now these are discussed one by one as follows

Historical Cost Model

This model was developed by R. Lee Brummet, Eric G. Flamholtz and William C. Pyle. Under this method all the costs associated with human resources such as recruitment and selection, training and development are accumulated. All these expenses are capitalised and written off over a period of time. This method is just in synchronisation with historical cost method of maintaining and depreciating the physical assets. Just in terms of amortisation there is difference if human asset expires before the term for which it was hired, is charged against revenue in the year in which the asset expired. The inherited merit of this method lies in its simplicity whereas in terms of demerit this method does not take into consideration the whole potential of employees.

Replacement Cost Model

This methodology was developed by Rensis Likert and Eric G. Flamholtz. Under this approach human resources are valued at their replacement value. The main tenet of this method rests upon the talent and experience if the existing human resources are replaced with the same quality human resources or so. This model differs with historical cost method only in terms of capitalisation, here the value is not capitalised but replacement is considered as an option. The superiority of this method lies in the fact that it measures human resources at their current value of replacement making it more realistic measure. Whereas, drawback lies in the fact that what is or should be the replacement cost of existing human resources? Moreover, there would an element of personal bias and prejudice in valuing the favourable or unfavourable employees. In other words, the operational difficulty lies in adopting this method.

Opportunity Cost Model

James S. Hekimian and Curtis H. Jones propounded this model of opportunity cost. The basic fundamental of opportunity concept of Economics is used under this model. The value of an employee under this method depends upon the alternative use of an employee. If employee does not have an alternative use no value is placed on employee. In other words this method employs the mechanism of competitive bidding process, making it in aligned with scarcity of employees. The opportunity cost of employee or a group of employees belonging to one department in the organisation is ascertained on the basis of bidding made by other departments in the same organisation for same employees. The merit of this model is that of optimal allocation of human resources in the organisation and utilisation of the same simultaneously. At the same time this model does the injustice to the employees those who do not find a competitive bidding in the organisation and also restricts the utilisation of employee just to the next best alternative.

Standard Cost Model

This model was propounded by David Watson. Under this model the value or the standard value of employees in terms of recruitment and selection, training and development depending upon the grade of employees is determined each year. The value so arrived at is supposedly the value of human resources for accounting purposes. The merit of this method is of its simplicity and can be varied from organisation to organisation that suits best to its structure. However, grading the workers can be a process that is cumbersome and can invite unwanted resistance from employees.

Present Value Model

The present value model was developed by Lev and Schwartz. The human resources of organisation are valued at their present value after taking into consideration the age and skill of employees divided into groups, average annual earnings calculated for various ranges of age, total earnings of the group till the age of retirement and cost of capital at which the total earnings will be discounted. From all these elements the present value of human resources will be arrived at, with the help of the following formula:

$$Vr = \sum_{T=r}^T \frac{I(t)}{(1+R)^{t-r}}$$

Vr- Value of an individual at r years old

I (t)- Annual earnings of an individual upto the age of retirement

t- Age of retirement

r- Employee's present age

R- Appropriate discount rate

In terms of merits, this model is the most practical based in terms of assumptions and calculations. The figures so arrived are more realistic in numerical terms. Whereas, in terms of demerits, employee serving a particular organisation in today's era is difficult to assess. At the same time this model ignores the advancements made by employees in terms of their skills.

Net Benefit Model

Net benefit model was developed by Morse. This model is an extension to the PV Model. According to this model, the value of human resources is equal to net benefits derived by an organisation from the services of its employees. This method assesses the difference between gross present values of human resources with the initial investment made in the same.

Conclusion

No doubt it is an intricate process to account for the human resources in the books of accounts. In terms of physical assets it is comparatively easier to record and amortise the same. Development and availability of methods does not make it easier to record the monetary aspects of human resources. Yet, there are other operational aspects that make it even difficult to record human resources in monetary terms like skill, skill utilisation and skill up gradation. Still such an important asset finds itself attached as an off balance sheet item as a footnote. More institutional initiatives are required in from the part of governmental and quasi- governmental bodies

References

1. Flamholtz, Eric. Human Resource Accounting: Advances in Concepts, Methods, and Applications. (1985 2nd edition) San Francisco: Jossey-Bass.
2. Veltri, Stefania and Silvestri, Antonella, Direct and Indirect Effects of Human Capital on Firm Value: Evidence from Italian Companies. (July 1, 2011). Journal of Human Resource Costing and Accounting, Vol. 15, No. 3, pp. 232-254, 2011. DOI: 10.1108/14013381111178596. Retrieved from SSRN: <https://ssrn.com/abstract=2187427>
3. Hossain, Md. Shamim, Islam, Md. Rofiqul and Bhuiyan, Md. Majedul. (November 17, 2015). Recognition, Measurement and Accounting Treatment of Human Resource Accounting. Retrieved from SSRN: <https://ssrn.com/abstract=2691896> or <http://dx.doi.org/10.2139/ssrn.2691896>
4. Kodwani, Dr. Amitabh Deo and Tiwari, Ravindra, Human Resource Accounting - A New Dimension. (January 15, 2007). Canadian Accounting Association (CAAA) 2006 Annual Conference. Retrieved from SSRN: <https://ssrn.com/abstract=961570> or <http://dx.doi.org/10.2139/ssrn.961570>
5. Porwal, L.S. Accounting Theory. (1992). Tata McGraw Hill Publishing Co. New Delhi.
6. Lele, R.K. and Jawaharlal. Accounting Theory. (1996). Himalaya Publishing House.
7. Bhuiyan, H.U. and Biswas, P. K. (2007). Corporate Governance and Reporting: An Empirical Study of the Listed Companies in Bangladesh. Dhaka University Journal of Business Studies 28 (1).

Role of Protection Motivation Theory in Cyber Security of Indian Aviation sector

Anjan Kumar Sinha & Dr Nikhil Kulshetra*

Dr Binod Kumar Singh**

Abstract: Cybercrime is increasing, targeting to the people, organizations, and governments rapidly. The estimated expenses of cybercrime for the global economy are around \$445 billion every year, where 800 million only in 2013 were influenced by cyber surveillance and loss of the private data. Regardless of many existing countermeasures going for securing clients' honesty by resistance against malicious activities. Such activities can be either coordinated against themselves or against authoritative resources where the client is utilized as the backdoor by cyber criminals. As a key institution in international trade, the travel industry and aviation are central for the global economy. This strong, safe and effective transport service which cover up to 2.6 billion passengers a year and 48 million tons of goods every day, Aviation's global financial affects (immediate, backhanded, prompted, and the travel industry) is assessed at \$2.2 trillion or 3.5% of global total national output (GDP). In this article we described different frameworks for cyber security in Aviation sector and the protection motivation theory and its role.

I. Introduction

Currently, the cybercrime and cyber threats are increase in this relation to the security and protection of the global aviation system in cyberspace to be needed. Now, some cyber threats are data theft, integrated loss, cyber-attacks and this attack are versatile and extensive. They constantly attack from many ways, have different objectives and mysterious work. The coordinated information and communication technology (ICT) systems on the world, the global aviation system, are a potential target for a large-scale cyber-attack. With the constant and rapid reconciliation of new progress, the aeronautics industry continues to expand, change and finish progressively associated [1]. As innovations progress rapidly; however, our enemies and their threats are also huge. Without the appropriate IT security measures established for this progressive threat, industry could be in larger risk. Therefore, it is essential that the sector maintains the most atypical level of trust in aviation.

Now, there is no basic vision, no basic strategy, objectives, standards, execution models or international strategies that illustrate the IT security for commercial aviation. An enormous work in computer security has been cultivated. ISO, FIPS, NIST, Control Association and control of IT systems (ISACA) for information and related technologies (COBIT) having objectives to control on this type of security. These have set the standards that offer best practices in the aviation industry. Security work meetings, this experience and information can be used, extended and connected through the air network system. Ensuring a secured aeronautical framework and anticipating the evolution of cyber threats is a common responsibility, including governments, airlines, airports and producers. It is important that these people receive a basic model of leadership based on threats and communities, to set

*Associate Prof (HR &OB), COMES, UPES, Dehradun

**Assistant Prof (Statistics & Design), COMES, UPES, Dehradun

goals and to characterize the cyber security structure and a guide to strengthen and the versatility of the aviation framework against the cyber-attacks [2]. This guide should be based on a typical vision and strategies, separate monetary and security concerns and address all layers of security, including knowledge, aversion, identification, response and recovery. The industry should also consider cases of effective community-oriented government / industrial teams as a project to plan aviation cyberspace security solutions in this respect.

II. Frameworks for Cyber Security for Aviation

The additional framework has been drafted to address the far accomplishment point of cyber security for the aviation:

- ✓ Establish regular cyber standard for the aircraft systems: organizations such as NIST, ISO and others, collaborate with the relevant basic infrastructure providers to create standard for information security and computer protection for the basic infrastructure. Useful support in these exercises is essential to ensure that the attractive prerequisites of aviation are taken into consideration when standards are created.
- ✓ Ensuring a cyber security culture: a similar order in which the high aviation security standard is achieved should also be related to the creation of a typical vision, a typical strategy, objectives and classifications, and a typical framework and guide to addressing the threats under this development.
- ✓ Understanding the threat: the aeronautics community should have a typical understanding of the performers and their motivations and purposes for effectively designing our protectors. Our enemies are making totally new possibilities to design cyber-attacks and we must do the same to stop them.
- ✓ Understanding the risk: to monitor cyber risk, it is essential for industry to recognize the components of the aviation framework that must be guaranteed. The aeronautical framework is a broad and complex international substance with many partners. It will require to investment and a restricted procedure to understand the framework's networks.
- ✓ Transmitting threats and ensuring awareness of the situation: it is authoritative that the government and aviation industry share data on threats and aid to increase the rate at which threats are mitigated in the aviation framework.
- ✓ Provide an incident response: Various occasions direct extraordinary response times. For example, a change in the ticketing system can take place quickly as a software solution, while a change in the aircraft software essentially requires more testing, affirmations and approvals. We need to think about these necessities within the framework of response. The procedures, techniques and standards suitable for responding to an attack must separate the requirements of each aeronautical subsystem.
- ✓ Strengthening the judicious framework: the industry should also guarantee the components of the aeronautical framework with systems and standards. This requires the protection of the interfaces between the real subsystems and the subsystem.
- ✓ Feature design principles: The basic design principles of Internet progress open doors for enemies. While the cybernetics continues to evolve, aviation must characterize the design principles of its networks and control systems that consider the progress of cyber security as a threat and do not guarantee silent disappointments [3].
- ✓ Carry out the necessary research and progress: the aviation community must concentrate its resources on research and the creation of appropriate design and

operational principles, for example, (1) create secure and resilient framework architectures, including techniques to maintain a secure data exchange, basic data separation Successful attacks recovery: (2) better detection of attacks; and (3) guarantee the legal status..

- ✓ Ensure that the government and industry work together: This includes: (1) establishing a policy for advancing short and long-distance IT security; (2) characterize recognized international standards of behavior; (3) strengthen the ramifications for horrible behavior; and (4) placing IT security as a major necessity in discretionary motivation.

A. The need for a cyber security framework for aviation

The aeronautics industry is renowned for its safety records. People around the world believe that aviation is one of the safest transport methods in the world. Aviation is seen as a very competent, safe and robust structure; however, people would not want it if they felt that their lives were at risk. To maintain a high level of public safety, the aeronautics community will require a typical framework, cybernetic standards and execution that demonstrate the management of the segments of the aeronautical framework [4]

Build up regular cyber standards for aviation systems

The global aviation framework is currently a standout among the most impulsive control systems and ICT on the world, but it is certifiable that there is no perception of a typical vision, nor a strategy, objectives, standards and systematic practices to further protect aviation against cyber threats. Use of standards or typical practices can help provide relief, even against internal threats. For example, the application of basic cryptographic standards for aviation communication and protocol could reduce the risk of obstruction for future improvements in the framework. Currently, efforts are being made worldwide to address the information security of basic infrastructures. It is essential that the aviation industry, in general, outline the promulgation, instructions, standards and future practices in the regions indicated below [5].

The aviation community must seek after the accompanying work-plan in light of the developing idea of cyber threats:

1. update the vision, strategy, objectives and the typical cyber security framework to address emerging threats;
2. increase collaboration and the center within the aviation community, with the dynamic support of all the important players in the aviation sector;
3. use, expand and apply industry best practices, response teams and ongoing research and education efforts;
4. bring governmental organizations appropriate to the dialogue;
5. start putting together a road map that distinguishes short, medium and long-distance activities;
6. Establish a government and industrial framework to facilitate national aeronautical systems, approaches and IT security plans.

B. Rising Cyber Threats

Table I: Rate of Increasing cyber Threats in different countries

Year	Sector	Occurrences	Cost	Source
Oct 2015	07 Countries 252 Companies	The annualized cost to detect, respond to, and mitigate a breach globally was around global IT breach	\$7.7 million (1.9% Increase)	Cyber security report 2016 by UBM Tech
May 17	50 nations, 2lakh computers	'Wannacry' ransom ware,	\$4billion	Money Watch, 16 May 2017
Jun 17	All sectors	2014: 44,679(incidents) 2015: 49,455 2016: 50,362 27000 Cyber Security threat incidents till june 17	-----	Cert-in

Source: http://www.dgca.nic.in/reports/Traffic_reports/Traffic_Rep0315

III. Cyber Incidents in Aviation Sector

The history of Cyber-attacks in to the aviation industry and major cyber-attacks across the world in recent period:

- For the fiscal year 2008, hackers have hijacked the FAA computers in Alaska and have become "insiders" of the FAA. By exploiting the inter-connected FAA networks, hackers subsequently stole the FAA administrator's password in Oklahoma [6]
- LAX has also experimented with a series of cyber-related computer incidents targeting a networked baggage system (Cheong 2011).
- The Dubai International Airport (DXB) had 50 e-mail addresses and associated passwords stolen by a team of hackers from Portugal Cyber Army and High-tech Brazil Hack Team.
- The corporate airport resource planning system of the Indian airport authority was successfully violated, which caused the system to stall, but the most important thing was the loss of employee personal data [7].
- Hackers believed to be connected to the Chinese government have infiltrated the United Airlines information system, compromising customers' records and flights in May 2015 [8]. The violation occurred around the same time that United had a computer failure that blocked the entire flight for nearly two hours (although no connection between incidents has ever been confirmed).
- Ref table below for other incidents-

Table II: Increasing Cyber Crime rates in Aviation Sector

Occurrences	Year & country	Source
6h shut down of FAA control tower	1997; Worcester Airport	http://www.irational.org/apd/cips/juvenilepld.htm 12 sep 17,1245
Almost 60,000 cases of Internet abuse and 2.9 million piracy attempts have been blocked in a year	Los Angeles Airports, US	Cheong 2011
In June 2015, the lot of the Polish airline cited a cyber-attack on its flight planning computers.	Warsaw, Chopin Airport	https://www.sita.aero/air-transport-it-review/articles/cyber-attacks-not-if-but-whensep1230h
75 US Airports were affected by a cyber attack in 2013	Atatürk and sabihagökçen airports , turkey	
Hacking of Air India's frequent flyer programme miles	2016, Air India (India)	http://dnaindia.com/money-report-air-india-hack-sheds-light-on-growing-threats-in-aviation-12-Sep-17-12:30
US minor admits Brussels airport cyber attack-(failed)	Brussels	BBC news ,09 Feb 17
27 Jun 17 airport hit by cyber attack	Kiev,Ukraine	Www.reuters.com/article
9/11;\$100 billion	2011,united States	David baker, International journal of safety and security in tourism

Source: IATA, ACI, Individual company accounts, Oxford Economics

IV. Airline Business Problem

A.Neglecting Cyber Vulnerabilities causes huge loss in Indian Civil Aviation Industry

Cyber Attacks on the critical Infrastructure or any business cannot be predicted for its range and depth. The time taken to respond, mitigate and recover from the situation would estimate the losses. Thus, the criticality of Cyber attack would determine its range and depth.

In Airline business, few of these may lead to-

- ✓ Shutting down Airport Terminal for few minutes to time taken to respond and recover.
- ✓ Delay in boarding, take-off.
- ✓ Delay in ticketing.
- ✓ Shutting down Runway lights.
- ✓ On flight emergency.
- ✓ Baggage/Cargo Management
- ✓ Fraudulent booking
- ✓ Fraudulent Credit/Debit card payments etc.

Although Aviation economics is highly complex to understand because of its too many complexities on Lease rent, Taxes & Insurance. An Illustration is made and two examples have been taken to identify cost of business of Airport and an Airline from Indian Civil Aviation [9].

ILLUSTRATION 1

B.Delhi International Airport Limited (DIAL)

Table III: Financial Report of Delhi International Airport

Estimated Earnings(EBITDA)	1886.34 Crs
Profit after taxation	508.86 Crs
Total Passengers Handled	48.92 Million
Total Cargo Ferried	7,87,168 Metric tons
*Profit per ton of Cargo ferried	Rs 3232 per metric tons
*Profit per passenger Handled	Rs 53 per passenger
(Assuming only 50%profit for passengers handled and 50% profit from Cargo)*	
Profit per hour of operation	Rs 5,80,890/- per hour@ 5585 passenger per hour

Source: (Annual Financial Report of DIAL of year 2015-16 as on 31 Mar 2017)

ILLUSTRATION 2

C.Indigo Airlines

Table IV: Financial Report ofIndigo Airlines

Profit After tax	Rs 16592 Million
Total passengers carried	52.8 Million @4.4 Million per month
*Profit per passenger carried	Rs 314.25/- (Neglecting any income from other sources)
Number of Aircraft	131
Total Flights flew in a year	300526
Profit per Flight made	0.055 Million
Percentage Seat Utilization	85%
Profit per hour of operation	18.95 Lakhs

Source: (Annual Financial Report of Indigo Airlines of year 2015-16 as on 31 Mar 2017)

D.Analysis

The analysis of above is that if DIAL closes for an hour the accumulated loss is not only for Rs 5.80 Lakhs as above but also loss of one flight carrier of Rs 19 Lakhs and other airlines and other business partners.

V. Protection Motivation Theory

The study takes Protection Motivation theory as benchmark to study for its applicability for aviation Cyber Security behaviour in Indian Civil Aviation sector and certain definitions used are:

- ✓ **Perception Management – the relevance**

People's behavior is influenced by their perceptual reality and not by real reality and therefore the annoyance of cyber threats and their effects in various sectors facing it should be perceived.

✓ **Cyber Threats**

Cyber threats are the attacks on Internet of things (IoT) in the domain of mobile, computing and web wherein any functional system can be jeopardized/compromised irrespective of physical presence of destroyer in the vicinity [10].

✓ **Cyber Security Behaviour**

The constant secured conscious behaviour among people to enhance the digital protection of data for secured and safe environment.

Threat appraisals and online safety behaviors

Based on the PMT, it was found that threat assessments include online security protections. However, previous research that identified the effects of threat assessments on behavioral protective intentions has provided a series of conflicting results. In some studies, the severity of the threat was an important factor in predicting security-related protection, while some studies found that the severity of perceived threat is not an important factor in predicting the intention to implement virus protection. The threat variables have been further expanded in recent security research, adding a fear variable or integrating multiple variables to measure threat assessment. To investigate the effect of threat assessment, the severity of the threat was included in this study with the premise that a general description of Internet use generates threats of varying severity and, therefore, more stringent attention, they involve significant costs of response. Furthermore, it was found that threat levels were positively related to the intention to adopt e-mail security services. Furthermore, a threat is perceived, influenced by the severity and susceptibility of the threat. Based on the theory of reasoned action, PMT decrees how and why people decide to undertake protective behaviors.

VI. Conclusion

The relentless pursuit of commercial aviation development has reached an extraordinary level of unshakable quality and safety, and a secure world on the quality, caution, competence and versatility of the global aeronautical framework. Whatever the case, the global aeronautical framework is at a crossroads. The updating of ICT in the aviation framework progressively links the global aeronautical framework. Full ramifications of the extended network and ICT dependency must be understood considering the progress of cyber threats to ensure that trust in aviation remains. The aeronautical community is in an excellent position to monitor the risks of its individual tasks and resources and to decide on valid methodologies to make them safer and stronger. In any case, at present there is no typical roadmap or an international information security policy in commercial aviation. To maintain this high level of certainty, it is essential that the aviation regulators create a unique multi-layered framework for the aviation network management. "The importance of the aviation industry for the economy of the country cannot be minimized; the rate of development of civil aviation has exceeded the overall development of the national economy of the United States" and so for India. Because of this development and relentless dependence on technology, the threats to computer security along with integrated network of civil aviation remains a constant challenge. While computer security updates are in place the country's aviation systems need to be more secured and proactively chased for perfection using both technology and behavioural aspects.

References

- [1]. National Institute of Standards and Technology (NIST), Update on the Development of the Cyber security Framework, dated June 18, 2013, <http://www.nist.gov/itl/cyberframework.cfm>
- [2]. Cyber Security Glossary
- [3]. 'Security Experts Warn Airlines Face Threat of Cyber Attacks', Sydney Morning Herald, and July 6, 2015.
- [4]. 'Polish Airline, Hit By Cyber Attack, Says All Carriers Are At Risk', Reuters, June 22, 2015,
- [5]. Aviation Cyber Security Toolkit North American Premiere at AVSEC World', IATA Press Release, 28/10/2014.
- [6]. 'Watching The Watchmen: US Shield To Protect Drones From 'Spoofing' Cyber Attacks', Russia Today, December 6, 2014.
- [7]. Argus Cyber Security. (2015). Senators to introduce legislation to protect drivers from auto cyber- attacks.
- [8]. Federal Register. (2013). Special Conditions: Boeing Model 777-200, -300, and -300ER Series Airplanes; Aircraft Electronic System Security Protection from Unauthorized Internal Access.
- [9]. IATA. (2015). Aviation Cyber Security Toolkit 2nd Edition.
- [10]. Lim, B. (2014). Emerging Threats from Cyber Security in Aviation - Challenges and Mitigations

Masstige Strategies: Class or Mass or Class for Mass

Mr. Mahendra More*

Mr. Nilesh Kate**

Abstract

In the era modernization and globalization, with increased income levels consumer are becoming aspirants for luxury brands while luxury brand producers are stretching the portfolio downwards so as to make the prestige brands affordable for the consumers. In most of the shopping and specialty goods consumers are being made available with the masstige products, which are nothing but prestige products for masses. Masstige strategies are adopted by the players across most of product categories but there are some categories which are still sensitive and their exclusivity may be at stake and brand dilution may happen if organizations are adopting masstige strategies.

Introduction

“These new customers for luxury are younger than clients of the old luxe used to be, they are far more numerous, they make their money far sooner, and they are far more flexible in financing and fickle in choice. They do not stay put. They now have money to burn. The competition for their attention is intense, and their consumption patterns-if you haven't noticed- are changing life for the rest of us.” (Twitchell, 2002)

Luxury brands conventionally targeted a narrow and elite range of high-value customers. These customers are at the top end of the consumer market spectrum, and so are willing to endow in unique, well-crafted products and services which have a premium price tag. Part of the appeal of luxury brands to high-value customers is the sense that the product they are buying is only available to a very small and select group of individuals. According to (Nyeck, S., 2004), luxury consumption serves personal motivations such as the pursuit of pleasure, beauty, and perfection, thus the perceived value may change depending on personality factors. As per (Truong Y. , 2010) the findings of the study conducted in France showed that extrinsic aspirations are more strongly related to conspicuous consumption than to quality search and self-directed pleasure, suggesting that extrinsically-motivated consumers buy luxury brands mainly, but not wholly, as part of conspicuous consumption behavior. The idea of owning exclusive, unique items from a luxury brand is both an aspirational dream and a desire (Joy, A, Sherry, J.F. Jr, Venkatesh, A, & Wang, J. & Chan, R., 2012). Consumers buy more luxury goods today than before for different reasons which could include a desire to emulate the lifestyle of the riches or the social class immediately above them. (Amaldoss W & Jain S, 2005). However, since the beginning of the 21st century, increasing numbers of luxury brands have been extending their presence downwards, into the “masstige” market. Masstige is the terminology pertaining to the goods that are perceived to have prestige or high style but are affordable for a wide range of customers. It is the impression of exclusivity in goods that are affordable for many. A masstige positioning strategy is about uniting a successful prestige positioning with an

*Assistant Professor, Pune Institute of Business Management (PIBM), Pune

**Assistant Professor, Pune Institute of Business Management (PIBM), Pune

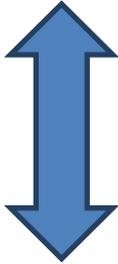
extensive appeal but with little if no brand erosion. Masstige strategy has been innovative and effective for some of the new luxury brand owners and made them the largest firms in their industry in terms of revenues. Masstige brands used to differentiate themselves from mid segment brands by their prestige and from luxury brands mainly by their reasonable pricing. (<http://eightluxurymarketing.com>, 2018)

Masstige means extending the brand downward so as to make it affordable for mass market. The word is a blend of the words mass and prestige and has been described as "prestige for the masses." The term was popularized by Michael Silverstein and Neil Fiske in their book *Trading Up* and Harvard Business Review article "Luxury for the Masses." Masstige goods are defined as "premium but attainable," and there are two key creeds: They are considered luxury or premium products and they have price points that fill the gap between mid-market and super premium.

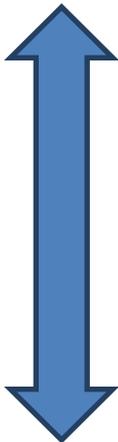
While stretching luxury brand to Masstige brand, it is pivotal to link the masstige product with the luxury brand in order to generate the appeal to the customers a sense of luxury at a reduced price. At the same time the linking must not be too closed to the luxury version of the product since luxury products rely on a sense of exclusivity. There must be clear distinction between benefits offered by luxury product and masstige product. Else organizations may damage the luxury brand as it will be watered down by the masstige cousin readily available low price point. Pricing is the best way to create a clear divide between luxury products and masstige offerings. If you wish to extend your luxury brand downwards by developing a range of masstige products, it is essential that you create a ladder of benefits which are attached to each price point.

As shown in figure below, in terms of perceived prestige, new luxury brands are substantially closer to traditional prestige brands than middle-range brands. However, in terms of price, they are substantially closer to middle-range brands than traditional luxury brands. Although some authors have suggested the existence of such a masstige strategy in previous conceptual research, little if no empirical study has confirmed this. (Truong, McColl, & Kitchen, 2009) The findings have confirmed that the two new luxury fashion brands are perceived by consumers to be much closer to the level of prestige of traditional brands than middle-range brands. Yet, their prices are much closer to those of middle-range brands.

Traditional Luxury Brands



New Luxury Brand



Middle Range Brands

PERCEIVED PRESTIGE

Objectives

1. To study the consumer behavior towards masstige product.
2. To study the effect of masstige strategies on consumers.

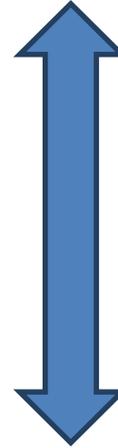
Methodology

The present study is based on the secondary data. The data has been procured from the related articles, research papers, and reports. This research is essentially aimed at understanding the consumer behavior towards masstige products and the effects of masstige strategies on consumers. Researchers have also considered the views/ opinions expressed and experiences shared by the experts in the subject area under consideration.

Theoretical Framework

The adequate equilibrium between perceived prestige and price premiums is critical to successful masstige strategies. It is instinctive to say that certain brands are not suitable for masstige strategies simply because their clientele is extremely sensitive to the exclusive character of their brands. Another tricky could involve the identification of the risk factors of brand dilution. Certainly if there is no equilibrium between perceived prestige and price premiums it will lead to two different behaviours by luxury brand loyal Customers and luxury aspirants. Masstige strategy may dilute the brand leading to brand deterioration

Traditional Luxury Brands



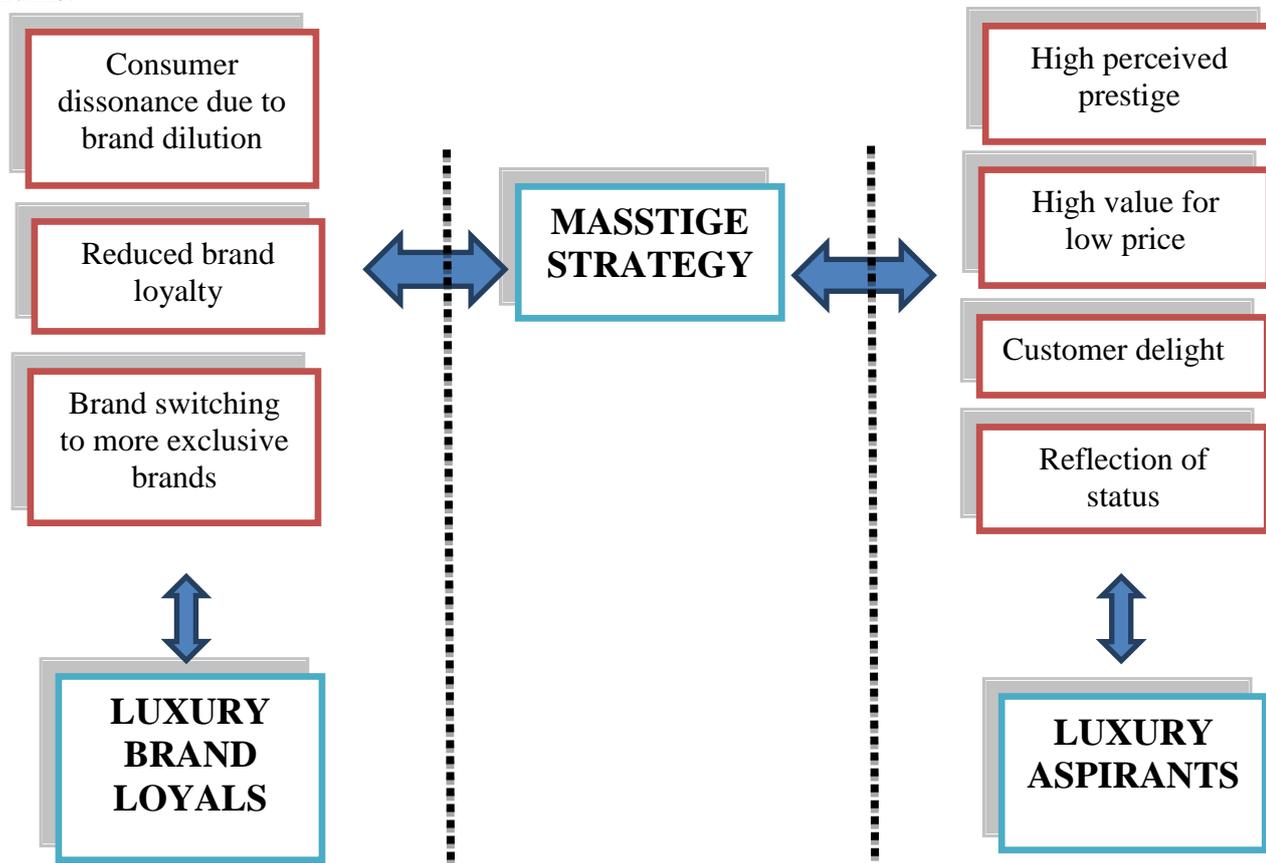
New Luxury Brand



Middle Range Brands

PRICE

denting the loyalty and inhibiting brand switching to more exclusive brands of highly exclusivity sensitive consumers. While luxury aspirants will inhibit exactly contrasting behaviour towards fulfilling the luxury aspirations through Masstige products at low price premiums.



Theoretical Framework

Conclusion

Luxury brands are often considered as being exclusive and expensive, thus their prestige brand image can only be maintained via limited accessibility in both geographical terms and socio-demographical terms. One of the objectives of this study was to demonstrate that the line delimiting traditional luxury brands from other brands has become blurred by the emergence of new luxury brands, and it seems that a certain level of brand prestige can be maintained even when a mass targeting strategy is pursued. The adequate equilibrium between perceived prestige and price premiums is required to be balanced by the new age organizations so as to be successful while adopting Masstige Strategies.

BIBLIOGRAPHY

Amaldoss W, & Jain S. (2005). Conspicuous consumption and sophisticated thinking. *Management Science*, 1449-66.

<http://eightluxurymarketing.com>. (2018, October 12). Retrieved from <http://eightluxurymarketing.com>: <http://eightluxurymarketing.com/luxury-brand-extend-masstige/>

Joy, A, Sherry, J.F. Jr, Venkatesh, A, & Wang, J. & Chan, R. (2012). *Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands. Fashion Theory*.

Nyeck, S. (2004). Luxury Brands Online and Offline: The case of French Brands. *European Retail Digest*, 20-24.

Truong, Y. (2010). Personal aspirations and the consumption of luxury goods. *International Journal of Market Research*, 653-671.

Truong, Y., McColl, R., & Kitchen, P. (2009). New luxury brand positioning and the emergence of masstige brands. *Journal of Brand Management*, 375-382.

Twitchell, J. (2002). *"Living it up : our love affair with luxury*. New: Columbia University Press.

Innovation & Indian Start Ups – 2018 & Beyond

Dr.Chetna Narendra Mehta*

Abstract

The startup story in India has, in the past, been defined by consumer-driven ventures like Flipkart and Snapdeal, which eventually became e-commerce giants, drawing billions in funding. Lately, there has been a gradual shift in that ecosystem as India's startups begin to focus on technology and product innovation, moving away from the consumer. Startups have been the flavor of the season, resulted into the emergence of a number of home grown unicorns across the country. One of the major contributors leading to this development has been the mega funding that has been ploughed into most of these unicorns between the period 2007 and 2015. An ambitious program called Startup India Standup India, aimed at revolutionizing and accelerating the startup revolution in India, which is already witnessing strong traction. However the road to success is not as smooth as it appears to be. The larger problems plaguing the businesses, such as the unorganized and fragmented Indian market, lack of transparent policy initiatives, lack of infrastructure, lack of knowledge and exposure, complications in doing business, etc. are at least now being identified as issues that need to be addressed. The right policy announcements by lawmakers can push the growth of startups. Various stakeholders such as the government, corporate, educational institutions and others should join hands to build a better ecosystem for young people by creating infrastructure for mentoring startups. In times like these, pro-reforms announcements are required to provide the impetus to the general business environment in the country in startup space.

Keywords: Startups; Innovations, Entrepreneurs

Introduction

In the global geography of innovation, India is straddling two continents. Its engineers have contributed to the success of the Silicon Valley: the father of the USB socket, the inventor of the Intel Pentium chip, the general manager of Microsoft are Indian, as is part of the senior management at Google. The success of this Diaspora reflects the talents of Indian engineers, but it can also be linked with an original innovation culture, which expresses itself in an amazing ability to reverse concepts. Three meta-innovations illustrate this Indian way.

Conventional wisdom is double-edged. On the one hand it is the product of experience, a body of ideas and rules that, over time, have proven their efficiency. On the other hand, by being adopted by an increasing number of players, they end up defining a space so crowded and competitive that their competitive advantage vanishes. If everyone uses the same methods, they no longer allow making a difference.

It is in this context that innovators enter the game, sometimes expanding conventional wisdom and adding a couple of new tricks, sometimes adopting an entirely new approach, sometimes creating a whole world. This is called meta-innovation. A well-known example

* Pune Institute of Business Management

is the quip attributed (mistakenly, it appears) to Henry Ford: "If I had asked my customers what they wanted, they would have answered: faster horses."

Radical innovators do not just change the rules. They create – or reveal – a completely new space. This talent of theirs, which emerges from both realism and imagination, consists in showing us what had always been before our eyes, but a certain intellectual laziness rendered invisible. Innovation then is about reversing prospects, moving objects, and illuminating them with a new light.

In recent decades, the digital wave has been associated with a number of meta-innovations: the "free" business models or the value of relationships are well-documented examples, among others. They do not always have a patented inventor, but they rather are a formulation composed of a bunch of new emerging ideas that appeared around the same time. However, some of them remain inseparable from the name of their creator – and when these artists happened to be born in the same country, one can wonder about the culture of innovation that brought them together.

Indian Startups- Boosting Economic Growth

With the gen-next cool trend to start working on new and innovative ideas, India is all set to outperform all other nations on the world stage in the years to come. Setting up of small businesses by these young entrepreneurs is definitely going to boost the Indian economy in the near future. India is a home for almost 3100 startups starting per year standing just behind US, UK and Israel according to the NASSCOM report of 2015. If the growth is continued on the same pace then it is expected that Indian tech startups will generate almost 2.5 lakh jobs in the next five years.

India is also said to enjoy demographic dividend and it is anticipated that by 2020 India will be a home to 112 million working population falling in the age bracket of 20-24 years as compared to that of 94 million workers of China. This demographic dividend will definitely boost the startup culture in the country.

Initially, India was considered as the market for providing cheap labor to the world and for export of Indian services in the field of IT. Due to this India has witnessed low product development and innovation in the past. But, still it is not too late and the culture of startups has started in India in the recent past. It has already started bearing fruits and is all geared up to benefit the Indian economy in the long run.

Tech startups are leading the growth of startup era and it is ready to boost revenue generated by IT-BPM sector by almost 12-14 per cent for the current fiscal year as well. It is anticipated that the e-commerce market of India will grow by more than 50% within the next five years. India witnessed the largest infusion of capital from overseas through venture capital funds in the year 2014 in the indigenous startups. After the inception of new government in the center, an optimistic view has been developed around the growth story of Indian economy. This government has also started working towards improving India's rank in World Bank ease of doing business in which India is currently ranked at 142 positions. This will definitely boost the startups of the country. Foreign investors have started looking towards India as a favorable investment destination. Indian startups are proving to be the major tool for diverting a huge chunk of foreign wealth into the Indian economy.

Developed nations are now looking towards fast growing and emerging nations such as India to tap the huge untapped potential in these markets. In the recent years, different countries are taking different initiatives to link up their businesses with the Indian startups.

For Example: Business council of India in United Kingdom (UKIBC) is hosting startups of India in UK. Similarly, Swissnex, an agency of Switzerland is conducting market research in India with the help of its entrepreneurs to identify suitable business opportunities for them. On the same lines, Zone Startups based in Toronto Canada is also conducting research to understand Indian taste, culture and requirements that they can fulfill. It is said that almost all global giants such as Walmart, Goldman Sachs, Target, Thomson Reuters are eyeing towards Indian startups to tap the huge business opportunity.

Venture capital funds from abroad and angel investors are proving to be a big boon for Indian startup story. Indian startups such as Flipkart, Olacabs, Snapdeal, Hike, Shopclues, Freecharge, Inmobi etc. receive various rounds of follow-on financing as well either from their existing investors or from any new investor. These various rounds of funding also help these firms to hire more talent into the company. This helps the company to grow strategically and also add some more experienced people in the firm. In the recent times head hunting and poaching are common among these tech startups. There is a huge demand for Indian software engineers around the world. Any startup owner in any country sets an eye to hire talent from India, since it reduces their cost by almost 25% and at the same time it provides a very good employment opportunity for the developer.

Startups are flourishing in India not only in the field of internet but in various other fields as well. Educational tech startups are a new hot bee among various investors since it is anticipated that the complete educational system will be digitized in the near future. Similarly, startups are also eyeing big data for analytics, healthcare, beauty and fitness, biotechnology and other areas as well. Several startups have also ventured into food delivery service as well. Examples include Mast Kalandar in Mumbai and Bangalore, Eatlo, Freshmenu, TinyOwl etc. These have generated employment opportunities in large number for unorganized sections of the society in the form of delivery persons. At the same time, it has increased convenience for consumers as well.

Literature Review

Paul Graham says that "A startup is a company designed to grow fast. Being newly founded does not in itself make a company a startup. Nor is it necessary for a startup to work on technology, or take venture funding, or have some sort of "exit". The only essential thing is growth. Everything else we associate with startups follows from growth.

A startup business is defined as an organization:

- Incorporated for three years or less
- At a funding stage of Series B or less
- An entrepreneurial venture/a partnership or a temporary business organization
- New and existence for not more than five years
- Revenue of up to INR 25 cr.
- Not formed through splitting or restructuring.

Thomas Hillmann and Manju Puri (2000) examine the empirical evidences on the impact that the venture capitalists can have on the development path of new firms. Their study suggests that there is soft facet to venture capitalists in terms of supporting companies to build up their human resources within the organization.

Christopher A Pissarides (2001) in his paper studied that the role of company starts up costs for employment performance. This paper is highly theoretical one. The conclusion is the factors that can explain the differences in Labor Market performance are structural and should be sought in the institutional structures of the countries. Omid Sharifi,

BentolhodaKarbalaiei Hossain (2015) in their paper stated that the various financial challenges faced by the Startups in India. It also depicts the difficulties faced by the startups at the initial stage. The major findings are major leap in technology have led investors to raise the bar in terms of how much leg work entrepreneurs are expected to do before even pitching their companies.

Methodology

Data has been collected from secondary sources. Studies and analysis is done based on the industry inputs.

Objectives of the Study

- a) To study entrepreneurship and innovation
- b) To study and present examples of innovative entrepreneurs. I have used descriptive research design.

Top 10 Start Ups In India with Innovative Idea

Very few startups have the potential to become big businesses. There are also very few with innovative ideas. While we are seeing a multitude of startups springing up here and there, some of them are extremely kickass and have some cool and innovative ideas! With the passion to offer something innovative, young entrepreneurs are coming up with superb out-of-the-box ideas.

Here it's a compiled list of promising and innovative startups in India that will rule in 2018 and beyond. We sided with younger, more obscure startups with big-time potential. All of them have fresh concepts with the potential to become industry leaders.

1. Tonbo

Tonbo is a supplier of advanced night-vision imaging systems to global military forces and defense agencies. Tonbo offers a suite of solutions for military surveillance, infrastructure security and transportation safety. Its imaging products and intellectual property cores are licensed to original equipment manufacturers and systems integrators to create finished equipment.

Tonbo was founded by Arvind Lakshmi Kumar in 2012. Its growth is driven by increased demand from emerging markets that are looking to modernize their aging military equipment.

2. Uniphore

Uniphore, a 2012 MobiSparks company, was co-founded by Umesh Yadav and Ravi Saraogi and is head-quartered in IIT Madras Research Park, Chennai.

Uniphore's solutions extend the power of speech to revolutionize human-machine interaction allowing any software application to understand and respond to natural human speech. Their solutions for voice biometrics, virtual speech assistant and speech analytics aim to change the way enterprises engage their consumers, build loyalty and maintain a healthy bottom-line.

Uniphore has pioneered the development of integrated and smart speech-recognition applications and boasts a roster of high profile customers across many industries, including banking, insurance, BPOs, agriculture, lending/MFI, healthcare and government.

3. Parallel Dots

Founded by Angam Parashar, Ankit Singh and Muktabh Mayank, Parallel Dots has a team of techies who are passionate about making life simpler for internet users.

Their algorithm automatically searches for the important events on themes matching the users' interest in the publishers archive and subsequently generates an interactive timeline of those themes on the publisher's webpage itself for the end-users.

Parallel Dots also recommends content to end-users and hence is bound to have strong competition.

4. Druva

Founded in 2008 by Jaspreet Singh, Milind Borate and Ramani Kothandaraman, Druva's solutions intelligently collect data and unify backup, disaster recovery, archival and governance capabilities onto a single, optimised data set.

Druva claims that its success is fueled partially by the rapid expansion of the data protection market, with market size expected to be \$28 billion in 2022 for both cloud-based and on-premises servers, in addition to the rapid cloud data protection and management adoption by Global 5000 organisations.

5. Unbx

Founded by Sundar and Prashant Kumar, Unbx's artificial intelligence (AI) powered plug-and-play solution enables online retailers to capture the 15-40% in revenue that is lost due to a poor product discovery experience. The platform delivers a customized experience to consumers resulting in better conversions. The company claims to power over 1.5 billion shopper interactions a month.

Unbx revenue grew 400% in the past year, according to a statement by the company. It has also strengthened its customer portfolio by adding leading retailers, including Ashley HomeStore, Express and FreshDirect to its list of clients.

6. Julia Computing

Julia Computing was founded in May 2015 by former UIDAI executive Viral Shah, Jeff Bezanson, Stefan Karpinski, and MIT applied mathematics professor, Alan Edelman.

Julia provides the productivity and performance equivalent to five major programming languages including R, Python, MATLAB, C, and FORTRAN. It further provides a sophisticated compiler, distributed parallel execution, numerical accuracy, and an extensive library of fast mathematical functions.

To date, Julia is being used by a number of universities for teaching and research, and by businesses in areas as diverse as engineering, finance, and ecommerce, to name a few.

7. HackerEarth

HackerEarth was founded in 2013 and was in the inaugural batch at the GSF India accelerator program. Its initial service was Recruiting, a service for vetting technical talent as part of the hiring process or internal company benchmarking. That service claims to have processed over one million applicants, and been used by the likes of Amazon for talent assessment purposes.

But HackerEarth was borne out of a desire to host hackathons and encourage participants and sponsors to get the most out of events. Last year, the company rekindled that focus on hacking when it introduced a second service — Sprint — which is targeted at corporate companies seeking fresh ideas or wanting a shot of innovation.

8. Whodat

Founded in 2013 by Kaushik Das and Sriram Ganesh, the Bengaluru-based Whodat provides augmented reality technology stack or software to other businesses for them to build an AR-based application or product feature.

Augmented reality or AR technology juxtaposes elements into a real scenario. For instance, while browsing furniture online on phone, AR technology can enable the user to know how the furniture will look in the customer's house, by projecting the product in its entirety and dimensions in the room.

9. Absentia

Absentia was founded in June 2015 by Shubham Mishra, VrushaliPrasade, and HarikrishnaValiyath, three third-year dropouts from BITS Pilani Goa Campus, with an aim to bridge the gap between existing e-content and virtual reality and extend that experience to everyone.

The company claims that Norah AI will be able to create new interactive content for various gaming experiences and types, including arcade games, casual games, puzzles, animation and graphics. It will essentially offer a neural network to content creators, where they'll be able to create games, GIFs and animations etc.

10. Flutura

Founded in 2012, by Krishnan Raman, Derick Jose and Srikanth Muralidhara, Flutura is a big data analytics solutions provider with a vision to transform operational outcomes by monetising machine data. It does so by triangulating economic impactful signals from fragmented data pools. The startup will use the funding for market expansion and to focus on deep industry expertise.

Flutura's flagship software platform, Cerebra, provides diagnostics and prognostics through machine learning and artificial intelligence, to unlock new business value for engineering and energy customers across the globe.

Conclusion

With rising population of the world, the world's need and necessities pattern had also evolved through the years. To sustain the ever increasing demand and supply of products, right entrepreneurship skills and innovation are much more needed. Without new business ideas and technology to support it, no consumer demand will be fulfilled completely. Thus, innovation and entrepreneurship is the need of hour and needs to be adopted by one and all business enterprises. Innovation and Entrepreneurship is a good resource for categorizing and identifying sources of innovation. Entrepreneur does an excellent job of organizing the key elements involved in innovation and there is a fair amount of real world examples that help others understand the concepts. Innovation and Entrepreneurship is more about creating a framework for innovation that can be used to compartmentalize current practices and shed light on their origins. To accurately point out, the least likely sources of innovation are from new knowledge and bright ideas. The insight into this alone, makes the concept well worth understanding.

References

1. <http://yourstory.com/2015/02/economic-survey-technology-india/>
2. http://articles.economictimes.indiatimes.com/2014-12-20/news/57257462_1_ukibc-zone-startups-indian-startups
3. <http://profit.ndtv.com/news/industries/article-indian-start-ups-may-create-2-5-lakh-jobs-in-5-years-722818>
4. http://articles.economictimes.indiatimes.com/2014-08-01/news/52327432_1_abc-consultants-manpowergroup-india-fresh-funding
5. <http://yourstory.com/2015/02/union-budget-2015-startup/>
6. Bedi Kanishka, Management and Entrepreneurship, oxford university press, New Delhi

7. Hisrich D Robert, Peters P Michael, Shepherd A Dean, Entrepreneurship, sixth edition
8. (2007), Tata McGraw-hill publishers, New Delhi
9. Oats David, A Guide to Entrepreneurship, second edition (2007), Jaico publishing house, Mumbai
10. http://smarteconomy.typepad.com/entrepreneurship_and_inno/ How to double and triple the success rate of all entrepreneurs in a country
11. <http://hbswk.hbs.edu/item/6168.html>/Do Innovation and Entrepreneurship Have to Be Incompatible with Organization Size?
12. <http://creativityandinnovation.blogspot.com/> Creativity and Innovation Driving Business -Innovation Index
13. M. Goyal and J. Prakash, "Women entrepreneurship in India-problems and prospects", Zenith International Journal of Multidisciplinary Research, 1(5), 2011.
14. M.D. Ensley, K. M. Hmieleski and C. L. Pearce, "The importance of vertical and shared leadership with in new venture top management teams: Implication for the performance of the startups", 2006.
15. N. Bosma, M. V. Praag, R. Thurik and G. D. Wit, "The value of human and social capital investment for the business performance of start-ups", 2002.
16. M. Caliendo, S. Kunn, F. Wiebner and J. Hogenacker, "Subsidized start-ups out of unemployment: A comparison of regular business start-ups, IZA Discussion Papers", 8817, 2015.
17. S. P. Robbins, Organizational Behavior, Motivation concepts, (India: Pearson Education, 2009), 194.
18. https://en.wikipedia.org/wiki/Start-up_company
19. https://en.wikipedia.org/wiki/Start-up_India
20. http://www.iisermohali.ac.in/Start-upIndia_ActionPlan_16January2016.pdf
21. <https://www.speakingwalls.in/blogs/speaking-walls/85632515-eight-challenges-faced-by-an-indian-start-up>
22. <http://www.iamwire.com/2015/10/biggest-roadblocks-faced-start-ups-india/124312>
23. <http://indiatoday.intoday.in/education/story/start-up-india-stand-up-india/1/573128.html> indiatoday.in New Delhi, 2016.
24. <http://yourstory.com/2015/12/india-100-top-start-ups-2015/>
25. 14.startups.in/sights/on-getting-published/
26. <http://www.indianstartups.com/>
27. Indian express, 2016
28. The Hindu, 2016

A Study on Consumer Perception towards Green Marketing Practices in Kanniyakumari District

Dr. L.SANKARI PRIYA*

Dr.T.VIJAYAKUMAR**

R.CHENTHIL PERUMAL***

Abstract

Green Marketing is a part and parcel of overall corporate strategy; along with manipulating the traditional marketing mix (product, price, promotion and place), it requires an understanding of public policy process. This study is mainly confined to study on green marketing practices among the consumers in Kanyakumari District. The opinions of the consumers are also discussed with a view to the development of green marketing practices in Kanyakumari District. The study is descriptive based on both the primary and secondary data. The research problem, the hypotheses and interview schedule all have been formulated and framed accordingly. The suggestions of the study emerge from the inferences drawn from the sample survey of consumers in Kanyakumari District. The secondary data were collected from standard text books related to topic, leading journals, published reports and booklets, documents and records of the Government departments and the internet. The present study is an empirical one based on survey method. First hand data were collected from the field through interview schedule. It is concluded that the important factors that influence to buy green products among the male consumers are health advantage and environmental concern. The important factors that influence to buy green products among the female consumers are incremental standard of living of farmer community and health advantage. Buying of green products is increasing because of environmental and health issues associated with food production. The increase in consumers' interest in green products has been attributed among other issues to the growing demand for food free from pesticides and chemical residues. With the present study an attempt is made to describe the consumer perception towards green products. The main motives to purchase green products are health and environmental benefits, plus support for local or small farmers. In addition, an important factor that was revealed as a barrier to the development of green foods is consumer information. Increased consumer awareness of green labeling and their trust in green labels as well as increasing the availability and range of green food products, may be the most effective way of increasing their market share.

Keywords: Green Marketing, Green Products and Consumer Perception

Introduction

Green marketing includes the concept of planning, development and promotion of environment-friendly products or services to satisfy the needs of ultimate customer's

* Assistant Professor & Head, Department of Business Administration, S.T.Hindu College, Nagercoil
Director, Training and Development, Loyola Institute of Science and Technology, Thovalai

*** Business Consultant

for quality, quantity, optimum price and service, without having a negative effect on the usage or its users. Therefore green marketing refers to a holistic marketing notion in which the production, marketing, consumption and disposal of products and services happen in a way that is less harmful to the environment with mounting awareness about the connection of global warming, non-biodegradable solid waste and harmful impact of pollution. It is a fact that both marketers and consumers are increasingly becoming aware of the need to switch over green products and services. The move from the existing marketing methods to green marketing may appear to be expensive in the short term, but it will absolutely prove to be crucial and beneficial, and cost effective in the long run.

Green marketing is rapidly changing the trendy marketing tactics as per the consumer demand in a sustainable way. Green marketing strategy reaps multiple benefits like increased revenue, reduced costs, new product development, risk mitigation, environment protection, global safety and enhanced brand reputation. Green marketing is needed to address environmental issues which influence all human society and natural atmosphere.

Green marketing has commanded tremendous attention in the context of global warming and climate change and as a result has forced both the customers on one side and the companies on the other to incorporate the principles of green marketing. Recently, it has drawn the attention of government too in this regard and paved the way for introducing many environment friendly policies. The divergence between limited resources and unlimited wants of human resource is to be used economically and in an environment friendly way. Companies should adopt innovative methods sustainable development in the competitive environment to enable the use of green marketing products. Using a green product safeguards the interests of its users, society and the environment. Setting up a responsive policy in this regard will maximize the health of the earth. Green Marketing, other similar terms used are Environmental Marketing and Ecological Marketing, is not all about manufacturing green products and services but encompassing all those marketing activities that are needed to develop and sustain consumer's eco-friendly attitudes and behaviors in a way that helps in creating minimum detrimental impact on the environment.

Statement of the Problem

Green Marketing is a part and parcel of overall corporate strategy; along with manipulating the traditional marketing mix (product, price, promotion and place), it requires an understanding of public policy process. On the other hand, there is growing interest among the consumers all over the world regarding protection of environment. Worldwide evidence indicates people are concerned about the environment and are changing their behavior. As a result of this, green marketing has emerged which speaks for growing market for sustainable and socially responsible products and services.

With rising concern of health issues and food safety, many consumers have turned their site attention towards green products. The increased consumers' interest in green food has been attributed among others to the growing demand for food free from pesticides and chemical residues. Green food promotes a balance among the humans, other living organisms and the nature. It also does not promote any artificial preservatives and they maintain the originality of food. This prevents excess use of harmful ingredients and thereby ensures health. This study is attempted to gain knowledge about consumer perception towards green products consumption and to see whether there is any potential which might change their behaviour. The rationale for carrying out this study is that

consideration for the environment could come only from well informed citizens who are aware of, and fully committed to their rights to a quality health and environment. Nevertheless, before any behaviour can be changed, it is necessary to evaluate the current state of consumers' awareness and knowledge. In order to know the practices of green marketing practices of consumers in Kanyakumari District, this study is carried out.

Objectives of the Study

The present work on green marketing has been carried out with the following objectives:

- To understand the consumer perception towards green marketing.
- To analyze the green marketing practices of consumers in Kanyakumari District.
- To suggest the measures to enhance the practice of green marketing in the study area.

Scope of the Study

This study is mainly confined to study on green marketing practices among the consumers in Kanyakumari District. The opinions of the consumers are also discussed with a view to the development of green marketing practices in Kanyakumari District.

Research Design and Methodology

The study is descriptive based on both the primary and secondary data. The research problem, the hypotheses and interview schedule all have been formulated and framed accordingly. The suggestions of the study emerge from the inferences drawn from the sample survey of consumers in Kanyakumari District. The secondary data were collected from standard text books related to topic, leading journals, published reports and booklets, documents and records of the Government departments and the internet. The present study is an empirical one based on survey method. First hand data were collected from the field through interview schedule. A sample of 150 respondents was selected for the study by using stratified random sampling method. The sample respondent for the study was stratified into 30 respondents each from five green products store in Kanyakumari District.

Hypothesis

- There is no significant difference in factors which influence to buy green products among different and profile variables of consumers in Kanyakumari District.
- There is no significant difference in perception towards green products among different profile variables of consumers in Kanyakumari District.

Limitations of the Study

Every researcher has to face several limitations. Some limitations can be controlled and some limitations are out of control of the researcher. In this particular study the researcher had some limitations as follows:

- (i) The Survey was limited to people residing in Kanyakumari District only.
- (ii) The respondents were less interested in answering the questionnaire, as they felt that it was an interruption to their regular work.
- (iii) The number of respondents was limited to 150 only.
- (iv) Some of the respondents are not open in giving their opinions.

Data Analysis

Table 1: Green Marketing Practices Followed By the Consumers – Ranking Analysis

Sl. No	Green Marketing Practices	Total Score	Average Score	Rank
1.	Optimum Utilization of Resources	9678	64.52	I
2.	Proper Waste Reduction/Management	7695	51.30	III
3.	Purchase of Green Product	8912	59.41	II
4.	Creating Awareness on Green practices	6408	42.72	IV

Source: Primary data

It is observed from Table 1 that 'Optimum Utilization of Resources' has been ranked as the first factor for green marketing practices followed by the consumers; 'Purchase of Green Product' has been ranked second; followed by 'Proper Waste Reduction/Management' in third position with 'Creating Awareness on Green practices' ranked as the fourth green practices followed by the consumers in Kanyakumari District. It is revealed that Optimum Utilization of Resources is first and main green practices followed by the consumers.

Table 2: Reasons for the purchase of green products

Sl. No	Reasons	No. of Respondents	Percentage
1.	Health fitness	48	32.0
2.	Taste	27	18.0
3.	Quality	20	13.3
4.	No preservatives added	49	32.7
5.	Variety	6	4.0
	Total	150	100

Source: Primary data

The table 4.12 describes that 32 per cent of the respondents prefers green products for health fitness; 18 per cent of the respondents for its taste; 13.3 per cent of the respondents for its quality of green products, 32.7 per cent of the respondents for its non preservative nature; and the remaining 4 per cent of the respondents for its variety.

Table 3: Type of green products purchase

Sl. No	Type of green products purchase	No. of Respondents	Percentage
1.	Food products	45	30.0
2.	Fruits	27	18.0
3.	Vegetable	58	38.7
4.	Health mix	11	7.3
5.	Oil	9	6.0
	Total	150	100

Source: Primary data

The table 3 clearly shows that 30 per cent of the respondents are using food products; 18 per cent of the respondents usually purchase of fruits because fruits are perishable in nature; 38.7 per cent respondents usually purchase vegetables because of the vegetables are perishable in nature; 7.3 per cent of the respondents are purchasing health mix and the remaining 6 per cent of the respondents are using oil.

Table 4: Opinion towards the price of green products

Sl. No	Opinion	No. of Respondents	Percentage
1.	Very high	42	28.0
2.	High	40	26.7
3.	Moderate	64	42.7
4.	Low	3	2.0
5.	Very Low	1	.7
	Total	150	100

Source: Primary data

The table 4 indicates that 28 per cent of the respondents opine that the price of green products are very expensive because inputs and procurement costs are more than conventional product; 26.7 per cent of the respondents express this as high price; 42.7 per cent of the respondents opine that the price of green products are moderate; 2 per cent of the respondents express as low and the remaining 0.7 per cent of the respondents opine that it is cheap comparison with non-green products in the study area.

Table 5: Main Reason for the Poor Preference of Green Products

Sl. No	Reasons	No. of Respondents	Percentage
1.	Highly expensive	23	15.3
2.	Non availability	84	56.0
3.	Local brand	21	14.0
4.	Unattractive packing	16	10.7
5.	Inferior quality	6	4.0
	Total	150	100

Source: Primary data

The table 5 shows that 15.3 percent of respondents reject because of too expensive price of green products; 56 per cent of the respondents are not able to purchase the green products because of the poor supply of green products, 14 per cent of the respondents reject for local brand, 10.7 per cent of the respondents are not prefer in green products because of the unattractive packing and the remaining 4 per cent of the respondents do not want to purchase the green products because of its poor quality.

Factors Influencing To Buy Green Products among Different Gender Group of Consumers

Consumers of different gender group have been influenced by different factors to buy green products. In order to find out the significant difference in factors influencing to buy green products among different gender group of consumers in Kanyakumari District, 't' test is attempted with the null hypothesis as, **"There is no significant difference in factors influencing to buy green products among different gender group of consumers in Kanyakumari District"**. The result of 't' test is presented in table 6.

Table 6: Factors Influencing to Buy Green Products among different Gender Group of Consumers

Factors	Gender (Mean Score)		T-Statistics
	Male	Female	
Price	3.7719	3.5376	1.579
Health advantage	4.1053	4.1183	0.113
Incremental standard of living of farmer community	3.9325	4.3118	2.555*
Convenience	3.9123	3.8495	0.428
Labeling	3.6316	3.5679	0.334
Environmental concern	3.9825	3.7312	1.739
Life shelf of the products	3.5263	3.3656	0.803

Source: Computed data

*-Significant at five per cent level

The table 6 shows the mean score of factors influencing to buy green products among different gender group of consumers along with its respective 'T' statistics. The important factors influencing to buy green products among the male consumers are health advantages and environmental concern and their respective mean scores are 4.1053 and 3.9825 and among the female consumers, incremental standard of living of farmer community and health advantage and their respective mean scores are 4.3118 and 4.1183. Regarding the factors influencing to buy green products, the significant difference among the different gender group of consumers, are identified in the case of incremental standard of living of farmer community since the respective 'T' statistics are significant at 5 per cent level, the null hypothesis is rejected.

Factors Influencing To Buy Green Products among Different Age Group of Consumers

Consumers of different age groups have been influenced by different factors to buy green products. In order to find out the significant difference in factors influencing to buy green products among different age group of consumers in Kanyakumari District, 't' test is attempted with the null hypothesis as, **"There is no significant difference in factors influencing to buy green products among different age group of consumers in Kanyakumari District"**. The result of ANOVA is presented in table 7.

Table 7: Factors influencing to Buy Green Products among different Age Group of Consumers

Factors	Age Group (Mean Score)					F Statistics
	Below 25 years	26-35 years	36-45 years	46-55 years	Above 55 years	
Price	4.0000	3.7273	3.7000	3.5192	3.3636	0.798
Health advantage	3.0000	4.3636	4.2400	3.9038	4.1818	6.253*
Incremental standard of living of former community	4.3500	4.0606	4.3200	4.0577	4.2727	2.116
Convenience	4.3000	4.0909	3.6600	3.9038	3.6364	3.372*
Labeling	4.2000	3.7273	3.2400	3.7812	3.4545	3.716*
Environmental concern	4.1000	3.7073	3.6200	4.1538	3.4554	3.443*
Life shelf of the products	4.0000	3.3939	3.1200	3.5769	4.3636	3.039*

Source: Computed data

*-Significant at five per cent level

The table 7 shows the mean score of factors influencing to buy green products among different age group of consumers along with its respective 'F' statistics. The important factors influences to buy green products among the consumers who are in the age group of below 25 years are incremental standard of living of farmer community and convenience and their respective mean scores are 4.3500 and 4.3000. The factors influencing the consumers in the age group of 26-35 years are the health advantage and convenience and their respective mean scores are 4.3636 and 4.0909. The important factors influencing to buy green products and among the consumers who are in the age group of 36-45 years are incremental standard of living of farmer community and health advantage and their

respective mean scores are 4.3200 and 4.2400, among the consumers in the age group of 46-55 years, environmental concern and incremental standard of living of farmer community and their respective mean scores are 4.1538 and 4.0577 and consumers who are in the age group of above 55 years are incremental standard of living of farmer community and their respective mean scores are 4.3636 and 4.2727. Regarding the factors influencing to buy green products, the significant difference among the different age group of consumers, are identified in the case of health advantage, convenience, labeling, environmental concern and life shelf of the products since the respective 'F' statistics are significant at 5 per cent level, the null hypothesis is rejected.

Perception towards Green Products among Different Gender Group of Consumers

Consumers of different gender group have different perception towards green products. In order to find out the significant difference in perception towards green products among different gender group of consumers in Kanyakumari District, 't' test is attempted with the null hypothesis as, "There is no significant difference in perception towards green products among different gender group of consumers in Kanyakumari District". The result of 't' test is presented in table 8.

Table 8: Perception towards Green Products among different Gender Group of Consumers

Perception	Gender (Mean Score)		T- Statistics
	Male	Female	
Green products are more expensive than conventional products	4.2105	4.3118	0.935
Price of green products is a barrier to buy	4.1228	4.0000	1.165
Green products are more ecologically sound than conventional products	3.9123	3.7204	1.281
There is a little variety of green products when compared with conventional products	4.1053	3.6882	2.332*
Green products are not easily found in grocery stores or in the hyper stores /markets	3.8596	4.1828	2.328*
Green food labels can easily be imitated	3.1228	4.2903	7.425*
Green food labels are confusing	3.5614	4.0538	2.919*
I usually read the ingredients on the labels before purchasing	4.0702	3.8817	0.985

Source: Computed data

*-Significant at five per cent level

The table 8 shows the mean score of perception towards green products among different gender group of consumers along with its respective 'T' statistics. The important perceptions towards green products among the male consumers that green products are more expensive than conventional products and there is a little variety of green products when compared with conventional products and their respective mean scores are 4.2105 and 4.1053 and among the female consumers, green products are more expensive than conventional products and green products are not easily found in grocery stores or in the hyper stores /markets and their respective mean scores are 4.3118 and 4.1828. Regarding the perception towards green products, the significant difference among the different gender group of consumers are identified in the case of there is a little variety of green products when compared with conventional products, green products are not easily found

in grocery stores or in the hyper stores /markets, green food labels can easily be imitated and green food labels are confusing since the respective ‘T’ statistics are significant at 5 per cent level, the null hypothesis is rejected.

Perception towards Green Products among Different Age Group of Consumers

Consumers of different age groups have different perception towards green products. In order to find out the significant difference in perception towards green products among different age group of consumers in Kanyakumari District, ‘t’ test is attempted with the null hypothesis as, **“There is no significant difference in perception towards green products among different age group of consumers in Kanyakumari District”**. The result of ANOVA is presented in Table 9.

Table 9: Perception towards Green Products among different Age Group of Consumers

Perception	Age Group (Mean Score)					F Statistics
	Below 25 years	26-35 years	36-45 years	46-55 years	Above 55 years	
Green products are more expensive than conventional products	4.0000	4.0909	4.2800	4.4231	4.1818	1.629
Price of green products is a barrier to buy	4.0000	4.0303	4.0200	4.0192	4.3636	0.755
Green products are more ecologically sound than conventional products	3.7500	3.5600	4.0577	3.7273	3.7973	4.612*
There is a little variety of green products when compared with conventional products	4.2500	3.6970	3.7000	4.0385	4.0000	0.873
Green products are not easily found in grocery stores or in the hyper stores /markets	4.0000	4.4200	3.6923	4.1818	4.0400	5.466*
Green food labels can easily be imitated	4.5000	3.0606	4.2400	3.7885	4.2727	9.102*
Green food labels are confusing	4.0000	3.9091	3.9200	3.6923	4.2000	0.865
I usually read the ingredients on the labels before purchasing	4.2000	3.8788	3.7000	4.1731	3.9091	2.049

Source: Computed data

*-Significant at five per cent level

The table 9 shows the mean score of perception towards green products among different age group of consumers along with its respective 'F' statistics. The important perceptions towards green products among the consumers who are in the age group of below 25 years that green food labels can easily be imitated and there is a little variety of green products when compared with conventional products and their respective mean scores are 4.5000 and 4.2500 and among the consumers in the age group of 26-35 years, green products are not easily found in grocery stores or in the hyper stores /markets and green products are more expensive than conventional products and their respective mean scores are 4.4200 and 4.0909. The important perception towards green products among the consumers who are in the age group of 36-45 years are that green products are more expensive than conventional products and green food labels can easily be imitated and their respective mean scores are 4.2800 and 4.2400, among the consumers in the age group of 46-55 years, green products are more expensive than conventional products and green products are not easily found in grocery stores or in the hyper stores /markets and their respective mean scores are 4.4231 and 4.1818 and consumers who are in the age group of above 55 years price of green products is a barrier to buy and green food labels can easily be imitated and their respective mean scores are 4.3636 and 4.2727. Regarding the perceptions towards green products, the significant difference among the different age group of consumers are identified in the case of green products being more ecologically sound than conventional products, green products being not easily found in grocery stores or in the hyper stores /markets and green food labels easily be imitated since the respective 'F' statistics are significant at 5 per cent level, the null hypothesis is rejected.

Suggestions

- To boost demand of green products in the domestic market, more emphasis should be laid on creating awareness among consumers about the health benefits and nutritional value of green products. The negative aspects of agro-chemicals should also be brought to the notice of people by preparing pamphlets, circulars, advertisements, exhibitions, green fairs, use of social media, seminars, and channel discussions, etc.
- Price and availability are perceived to be the major barriers to the consumption of green products. At present, the green products are available at a premium price. Efforts should be made to bring down the cost of green products so that its price may be able to come within the reach of common man.
- There is a need to create more trust in the production and certification process of agriculture products. Thus, informative packaging, giving appropriate information about green product and its contents and nutritional value, and proper labelling should be there to make people aware about green products, which, in turn, will increase the demand.
- There is need for marketing research for export potential of green products. There should be proper planning for marketing of green grown fruits, vegetables and food grains that should help farmers to get a better price for their produce. This, in turn, will motivate them to convert more area under green cultivation.

Conclusion

It is concluded that the important factors that influence to buy green products among the male consumers are health advantage and environmental concern. The important factors that influence to buy green products among the female consumers are incremental standard of living of farmer community and health advantage. Buying of green products is

increasing because of environmental and health issues associated with food production. The increase in consumers' interest in green products has been attributed among other issues to the growing demand for food free from pesticides and chemical residues. With the present study an attempt is made to describe the consumer perception towards green products. The main motives to purchase green products are health and environmental benefits, plus support for local or small farmers. In addition, an important factor that was revealed as a barrier to the development of green foods is consumer information. Increased consumer awareness of green labeling and their trust in green labels as well as increasing the availability and range of green food products, may be the most effective way of increasing their market share.

References

- Chandrashekar, H.M., "Consumers Perception towards Green Products - A Study in Mysore City", International Journal of Research in Business Studies and Management, Vol.1, Issue.1, November 2014.
- Mohanasoundari, T and Kalaivani, A., "A Study on Consumers Preference Towards Green Products- in Tirupur District", JSR - International Journal of Scientific Research, Vol.5, No.3, 2016.
- Sathyendra Kumar AD et.al., "A Study on Consumers Behavior towards Green Food Products in Mysore City", International Journal of Management Research & Review, Vol.5, Issue.11, 2015.

Women Employees of Apparel Stores In Kanyakumari District **– An Analytical Study**

Dr. V.MALAR VIZHI*

Abstract

The main purpose of this research is to analyse the attitude of women employees of apparel stores in kanyakumari district. In this research work, the research has been studied three objectives. For studying the objectives the researcher interviews the 160 apparel stores women employees in four taluk of kanyakumari district. The percentage analysis, *t-test* and weighted ranking test are to be used for final shape of this research work. The stratified random sampling technique is used for selecting the sample women employees from Apparel Store of kanyakumari district.

Keywords: Apparel Stores, Women Employees, Salary.

Introduction

In the present days status of women in India has been many changes over the past. After getting the job women's are continue to work even after marriage. A married woman has lot of accountability than men's in working industry. Women have poor socio economic status than that of men. Due to steady increase in the women employment their status is to be increased to the level of men. The earnings of wages and salary are base for women development in the country. Year by year women participation in employment in kanyakumari district is increased due to education. The apparel is one of the traditional and largest industries in the world. The large number of women is working in these industries.

Literature Review

Kurian Dolly and Kumar saleel (2014) had observed problems of women employees in private shops and business enterprises. The main hypothesis of the study was incidence of sexual harassment is higher and lower from young and old women. The study mainly focuses problems of women employees in Kerala. The study finally suggests that the Government need to enforce the legal provisions made available to women workers.

Vijayakumar Bharathi S et.al (2015) had observed that the work life balance of women employees in the information Technology industry. The study purpose 200 questionnaires were circulated among the respondents and collect the required data. The study finally suggest that employer and employee challenge of effecting a change rests with the attitude towards each other, will be increased the work life balance of future employees.

N.Abinaya and Jafarsathic (2018) conducted a study on work life balance among women employees in an apparel industry has analysed women employees regarding work life balance and suggest the ways to improve the work life balance. They identify four review of literature for this study. The percentage analysis and chi square analysis was used for final interpretation of this study. The study argued that poor working condition are very important problem of working women in apparel industry. **Anita Rachel D and Mohana Priya K** (2018) had observed that the problems of women employee's in Tirupur Apparel industry. They were undertaken five objectives of the study with interviewing 100 women

* Assistant Professor of Commerce, Vivekananda College, Agasteeswaram, Affiliated to ManonmaniamSundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu, India.

employees from Tirupur Apparel industry. The researcher used simple percentage analysis for final interpretation of data. The study report that the major problem is financial, transport, infrastructure and technology.

Statement of the Problem

Today women, both married and unmarried has independent and earn for their survival. The careers of women who are entering the working field they face a number of challenges. The favourable working environment, safety and security and also fair remuneration are expected by the women employees from their organization. In kanyakumari district large number of Apparel store are available and number of women's are working in these stores. They also expect smooth and safety working conditions, adequate salary, security and promotion. The working women also suffer from more travelling time, more working hours, poor welfare facilities and work pressure. In order to overcome the above problems the researcher have been undertaken the study.

Objectives of the Study

The present study covers the following.

1. To study the economic status of women employees of Apparel Stores in kanyakumari district.
2. To analyse the attitude of women employees towards current Job of Apparel Stores.
3. To analyse the problems faced by women employees from Apparel Stores.

Scope of the Study

The main scope of the study is to analyse the attitude of women employees towards working conditions provided by apparel stores and the study also find the problems faced by women employee in their working place. The study area is limited to kanyakumari district.

Methodology and Data Collection

The study is empirical in nature based on two types of data as primary as well as secondary. The secondary data have been collected from journal and internet. The primary data have been collected from the selected women employees with the help of well administered interview schedule. The questionnaire was given to 160 women employees who are working in apparel store in kanyakumari district.

Sampling Design

This study has been used stratified random sampling method. For the purpose of the study 40 women employees has been selected from each four taluk as Agasteeswaram, Kalkulam, Thovalai and Vilavancode as non- Proportional basis. The size of the sample is 160 (40x4) women employees.

Statistical Tools Used

The percentage analysis was used for economic status of women employees of Apparel Stores in kanyakumari district. The *t-test* was used for women employees' attitude towards current job of Apparel Store and reason for selecting the job. The weighted ranking technique was used for problems faced by women employees in their job.

Analysis and Interpretation

Table 1. Economic status of women employee:- Age

Sl.No.	Age	Frequency	Percentage
1.	Below 30 years	76	47.50
2.	30 – 40 years	55	34.38
3.	Above 40 years	29	18.12
	Total	160	100

Table 1 shows that 47.50 per cent women employees belong to below 30 years of age, 34.38 per cent are belongs to 30-40 years and 18.12 per cent belongs to above 40 years. The study reveals that majority of the respondents from below 30 years.

Table 2. Educational Qualification

SI.No.	Education	Frequency	Percentage
1.	Up to School	62	38.75
2.	Degree / Diploma	98	61.25
	Total	160	100

Table 2 observed that 61.25 per cent of the women employees have been done degree / diploma and 38.75 per cent are up to school level as educational qualification. The study report that majority of the women employees have completed degree /diploma.

Table 3. Monthly Salary

SI.No.	Income	Frequency	Percentage
1.	Up to ₹ 10,000	88	55.00
2.	₹ 10,000 – 15,000	54	33.75
3.	Above ₹ 15,000	18	11.25
	Total	160	100

Table 3 inferred that 55 per cent of the respondents have earned up to ₹ 10,000, 33.75 per cent are between ₹ 10,000 – 15,000 and 11.25 per cent are above ₹ 15,000. The study clearly indicates majority of the women employees has been earned up to ₹ 10,000 as monthly salary.

Table 4. Marital Status

SI.No.	Marital Status	Frequency	Percentage
1.	Married	82	51.25
2.	Unmarried	78	48.75
	Total	160	100

Table 4 noted that 51.25 per cent are married and 48.75 per cent are unmarried. The study indicates majority of the women employees are married in the study area.

Table 5. Monthly Expenditure

SI.No.	Monthly Expenditure	Frequency	Percentage
1.	Below ₹ 5,000	54	33.75
2.	₹ 5,000 – 10,000	42	26.25
3.	₹ 10,000 – 15,000	39	24.38
4.	Above ₹ 15,000	25	15.62
	Total	160	100

Table 5 understood that 33.75 per cent of the respondents have spent below ₹ 5,000, 26.25 per cent are between ₹ 5,000 – 10,000, 24.38 per cent are between ₹ 10,000 – 15,000 and 15.62 per cent are above ₹ 15,000. The study report that majority of the women employee have spent below ₹ 5,000 as monthly expenditure.

Table 6. Monthly Savings

SI.No.	Monthly Savings	Frequency	Percentage
1.	Below ₹ 2,000	42	26.25
2.	₹ 2,000 – 4,000	68	42.50
3.	Above ₹,4,000	50	31.25
	Total	160	100

Table 6 observed that 42.50 per cent of the respondents have saved between ₹ 2,000 – 4,000, 31.25 per cent are above ₹ 4,000, and 26.25 per cent are below ₹ 2,000. The study reports that majority of women employees have saved between ₹ 2,000 – 4,000 as monthly savings.

Table 7. Type of Family

SI.No.	Family Type	Frequency	Percentage
1.	Joint Family	76	47.50
2.	Nuclear Family	84	52.50
	Total	160	100

Table 7 shows that 52.50 per cent of the respondents from nuclear family and 47.50 per cent are joint family. The study reports that majority of the women employees from nuclear family system.

Table 8. Area of Residence

SI. No.	Area	Frequency	Percentage
1.	Rural	74	46.25
2.	Urban	86	53.75
	Total	160	100

Table 8 indicates 53.75 per cent of the respondents from urban area and 46.25 per cent are rural area. The survey reports that majority of the women employees from urban area.

Reasons for Selecting the Job

There are number of reasons of women to select the current job. These are family situation, need for independence, self-satisfaction, lack of other job, savings for future, and improve their standard of living. The reasons for selecting the job of women are analysed with the help of *t-test*. The results are shown in Table 9.

Table 9. Reasons for selecting the job

SI.No.	Reasons for selecting the job	Mean		<i>t-test</i>
		Married	Unmarried	
1.	Family Situation	4.255	4.215	2.981*
2.	Need for Independence	3.985	4.265	3.560*
3.	Self – Satisfaction	3.625	4.155	1.212
4.	Lack of other Job	4.185	3.855	2.651*
5.	Savings for Future	4.275	3.795	1.025
6.	Improve their Standard of Living	4.055	3.815	4.012*

***Significant at five percent level.**

The most important reasons for selecting the job among married women is ‘Savings for Future’, ‘Family Situation’, and ‘Lack of other Job’ since their respective mean score is 4.275, 4.255 and 4.185. Among unmarried women these are ‘Need for Independence’, ‘Family Situation’ and ‘Self – Satisfaction’ since their respective mean score is 4.265, 4.215 and 4.155. The significant difference among the two groups of women employees is identified in ‘Family Situation’, ‘Need for Independence’, ‘Lack of other Job’, and ‘Improve their Standard of Living’ since their respective t-statistics are significant at five percent level. Hence these are very important factor determine the selecting the job of women in the study area.

Women Employees Attitude towards Current Job

The women employees attitude towards current job are analysed with the help of *t-test*. For this purpose the researcher have been selected seven variables, these are Salary and Allowances, Incentives and Bonus, Welfare Facilities, Safety and securities, Rest room Facilities, Working hours, and Annual Increment. The results are shown in Table 10.

Table 10. Women employees' attitude towards current job

SI.No.	Factors	Mean Score		<i>t-test</i>
		Married	Unmarried	
1.	Salary and Allowances	3.925	3.625	1.210
2.	Incentives and Bonus	4.015	3.965	2.125*
3.	Welfare Facilities	3.825	3.525	2.916*
4.	Safety and Security	3.652	3.455	0.125
5.	Rest room facilities	3.155	3.265	1.650
6.	Working hours	3.865	3.655	2.965*
7.	Annual Increment	4.205	3.995	4.220*

***Significant at five percent level**

The highest rate of attitude of married women employees, in their job is 'Annual Increment', 'Incentives and Bonus', 'Salaries and Allowance' since their respective mean score is 4.205, 4.015 and 3.925. Among unmarried women these are 'Annual Increment', 'Incentives and Bonus' and 'Working hours' since their respective mean score is 3.995, 3.965, and 3.655. The significant difference between the two group of women employees is identified in 'Incentives and Bonus', 'Welfare facilities', 'Working hours', and 'Annual increment' since their respective *t-test* are significant at five percent level. Hence these are very important factor that impact the women employees in the study area.

Problems Faced By Women Employees in Their Job

The problems faced by women employees in their job are analysed with the help of weighted ranking methods. The results are presented in Table 11.

Table 11. Problems faced by women employees in their job

SI.No.	Problems	Total Score	Mean Score	Rank
1.	More travelling time	585	39.00	6
2.	More than 8 hours working	618	41.20	3
3.	Leave is difficult	625	41.67	2
4.	Low salary	627	41.80	1
5.	Poor welfare facilities	506	33.73	10
6.	Work pressure	606	40.40	4
7.	Always stressful	590	39.33	5
8.	Poor working environment	545	36.33	8
9.	Low increment	520	34.67	9
10.	Caring family is difficult	560	37.33	7

From the weighted ranking analysis shows that the first rank goes to 'low salary', second rank to 'leave is difficult', third rank to 'more than 8 hours working', fourth rank to 'work pressure', fifth rank to 'always stressful', sixth rank to 'more travelling time', seventh rank to 'caring family is difficult', eighth rank to 'poor working environment', ninth rank to 'low

increment' and tenth rank to 'poor welfare facilities'. Thus the study reveals that most important problems faced by women employees is low salary followed by leave is difficult.

Suggestions

1. Low salary is important problem of women employees in kanyakumari district. So that the Apparel Stores can increase the basic salary to all the women employees in order to improve the standard of living of women employees in the study area.
2. Another important problem of women employees of Apparel Store is sanctioning the leave is difficult. So that the apparel store management must take necessary step to sanction the leave to women employees. It will great help to reduce the work pressure of women employees.
3. The apparel store management in kanyakumari district can be conducted yoga, tour programme and meditation programme to all the women employees once in a every six month. This will reduce the stress and work pressure of women employees in apparel store of kanyakumari district.
4. In the study area women have got low salary from apparel stores. Hence the apparel store management take necessary action to rectify this mistakes and paid the salary to the women employees in the level of men. This will increase the socio economic status of women employees in the society.

Conclusion

This study is pointed out the women employees' attitude towards apparel store in kanyakumari district. There are three objectives have been taken by the researcher. This study pointed out the welfare facilities provided by the apparel store in kanyakumari district is good but most important problem of women employee is low salary, leave is difficult, more than 8 hours of working and work pressure. Hence the apparel store management takes necessary step to rectify these difficulties. These difficulties have been rectifying by apparel store, the standard of living of women employees is also improved.

Reference

1. Abinaya N and JafarSathic A, "Work life balance among women employees in an apparel industry: An analysis", *The International journal for Economics and Business Management*, Vol.7, issue 1, 2018.
2. Anita Rachel D and Mohana Priya K, "A study of problems faced by women employee's in Tirupur Apparel industry", *International journal of Novel Research and development*, Vol.3, issue 2, 2018.
3. Kurian Dolly and Kumar Sateel, "Problems of women employees in private shops and Business enterprises, Kerala", *Journal of women's Entrepreneurship and Education*, No-1-2, 2014.
4. Vijayakumar Bharathi S, Padma Mala E and Sonali Bhattacharya, "Work life balance of women employees in the information technology industry", *Asian Journal of Management Research*, 2015.

Study of Multiple Intelligence and Value Perception of Arts and Science College Students of ManonmaniamSundaranar University

Dr. V. THAMODHARAN*

Abstract

This research article focuses the relationship between multiple intelligence and value perception of Arts and Science college students of ManonmaniamSundaranar University. The investigator used descriptive type of survey method for data collection. It is very common in educational research. Survey method of investigation attempts to describe and interpret what exists at present in the form of conditions, practices, processes, trends effects, attitudes and beliefs. The investigator has adopted simple random sampling technique for collecting the data. The investigator used self made tools namely Multiple Intelligence Assessment Scale (MIAS) and Value Perception Assessment Scale (VPAS) prepared by the guide and the investigator. All the Arts and science college students affiliated to ManonmaniamSundaranar University formed the population of the study. From the population the investigator has chosen 1000 arts and science college students were taken for this investigation and simple random technique was adopted. For analyzing the data, the investigator used Mean, SD, Percentage, Analysis, t test, ANOVA test, Duncun test, Chi square test, Pearson's Product Moment Correlation and Factor Analysis were used for analyzing the data. The findings showed that the multiple intelligence of arts and science students are significantly correlated with their value perception of the arts and science college students.

Key words: Multiple intelligence, Value Perception

Introduction

Intelligence is the ability of an individual to tackle the situation wisely for happy ending. Intelligence is a kind of mental energy in the form of multiple or mental abilities that enable one to handle one's environment in terms of adaptation to face new situations as effectively as possible.

Gardner (1983) defines intelligence as a group of abilities that first seven intelligences such as linguistic intelligence, logical-mathematical intelligence, musical intelligence, bodily kinesthetic intelligence, spatial intelligence, interpersonal intelligence and intrapersonal intelligence in frames of mind. He added the last two in intelligence reframed (1999). He performed interviews with people and brain research on hundreds of people, including stroke victims, prodigies, and autistic individuals and so called "idiot savants".

Each person possesses all nine intelligences multiple intelligence theory is not a "type theory" for determining the one intelligence that fits. It is a theory of multiple functioning, and it proposed that each person has capacities in all seven intelligences. Most people can develop intelligences to an adequate level of competency although an individual may bewail his deficiencies in a given area and consider his problems innate and intractable; Gardner (1999) suggests that virtually everyone has the capacity to develop all seven

*Principal (Rtd), VOC college of Education, Thoothukudi , Thoothukudi District

intelligences to a reasonably high level of performance if given the appropriate encouragement, enrichment, and instruction. Intelligences usually work together in complex ways Gardner points out that each intelligence as described above is actually a fiction; that is no intelligence exists by itself in life (except perhaps in very rare instances in savants and brain-injured individuals). Intelligences are always interacting with each other.

Value Perception

Value perception is a type of perception that has to do with the opinions and thoughts that consumers hold in regard to a particular brand or product. With this approach to consumer perception, the focus is not so much on whether those ideas are valid, but simply what the consumer currently believes about those products. The goal of any company is to make sure that potential and current customers see their products as being worthwhile and trustworthy, factors which in turn encourage consumers to recommend those goods and services to others. Understanding the current value perception of any given brand or product is the starting point for grasping what is important to consumers. By doing so, companies can get some idea of how to put their efforts to market their products in turn it affects buying habits of consumers. When the perception is that the products are desirable and provide a level of value that consumers find acceptable, this is an indication that the marketing and sales efforts are working. At the same time, higher value perception also indicates that consumers believe the products actually provide the benefits claimed, and are more likely to buy them again. When value perception is low, this indicates a need to make some changes in order to prompt consumers to view the products in a different light. In some cases, this will mean looking at the current sales and marketing strategies to determine if the advertisements are creating expectations that the products cannot match. Advertising that is considered somewhat misleading or vague may also lead to miscommunications that trigger lower levels of consumer confidence. At other times, there may be an issue with the product itself that needs to be addressed before consumers will find it more desirable. Even a price issue can sometimes lower value perception, if consumers believe the retail cost of the product is not in line with the actual benefits the product or service provides.

It is important to remember that value perception is based on what consumers think of a given product, and not necessarily the actual quality of the product itself. High quality products may register low value perception owing to poor placement in retail locations, confusion with other products with a less than stellar reputation, or even advertising that for some reason does not resonate with consumers. After identifying what customers are thinking, steps can be taken to find out how those perceptions were formed and then use that information to make changes that ultimately make it possible for consumers to find more value in the products and services.

Need and significance of the study

Multiple intelligence theory opens the door to a wide variety of teaching strategies that can be easily implemented in the classroom. In the theory of multiple intelligence, values, teaching strategies are innovative to the educational scene are being suggested. All students can learn and succeed but not all on the same day in the same way. Intelligence is the ability to see a problem, then solve a problem in an acceptable way or make something that is useful to a group of people. Howard Gardner's theory of multiple intelligences identifies that there are many forms of intelligences and that people have varying strengths.

With an understanding of Gardner's theory of multiple intelligence, teachers, school administrators and parents can better understand the learners in their midst. They can allow the students to safely explore and learn in many ways and they can help students direct their own learning.

Adults can help students understand and appreciate their strengths and identify the real world activities that will stimulate more learning. In this world of science and technology only with high level of multiple intelligence one could survive successfully. Application of multiple intelligence theory helps students begin to understand their level of intellectual functioning. Multiple intelligence proposes that there are several important types of intelligence; one must understand in order to get a very big revolution in the information era. Health problems may arise due to incompatibility between the demands of the educational system and the characteristics of learner or between learner's expectations and the educational processes or both. Such incompatibilities are becoming more and more salient in the context of increasing competition in the job market, increased pressure for achievement from parents, uncertain future and parental aspirations and their desire for compensation through their progeny. Failure in examination, under achievement and the resulting frustration are becoming prominent features of educational life at school as well as at the higher educational levels, leading a wide range of health problems having far reaching consequences for individual as well as society well being. This is reflected in a recent analysis of suicide among students. Since the course which they are studying is only one year but the syllabus and the project works to be completed are many, the arts and science college students are more anxious in completing their project works in time, the failure of which results in them more values about future examinations, for which they have to cover a lot of syllabus. They have more value perception about their future plans since each and every art and science college students who are in a queue of completing their course will be waiting for a job notification through which they can get a government job. So, teacher educators, administrators, policy planners and guidance personnel connected with teacher education programmes, should think of ways and means of reducing the level of frustration. Thus it was thought prudential by the investigator to study of multiple intelligence and value perception of arts and science college students of Manonmaniam Sundaranar University.

Definitions of the terms

Multiple Intelligence

By the term 'Multiple Intelligence' means a set of intelligences such as Verbal-linguistic intelligence, Logical-mathematical intelligence, Visual-spatial intelligence, Bodily-kinesthetic intelligence, Musical-rhythmic intelligence, Interpersonal intelligence, Intrapersonal intelligence and Naturalistic intelligence.

Value Perception

By the term 'Value Perception' means a set of values such as personal value, educational value, physical value, moral value, cultural value, social value, literary value and aesthetic value.

Arts and Science College Students

The students those who are studying in the arts and science colleges. Their entry qualification is plus two. Graduate and post graduate students are those who pursue three years of under graduate degree course named Bachelor of Arts or Bachelor of Science and

two years of post graduate degree course named Master of Arts or Master of Science in arts and science colleges.

ManonmaniamSundaranar University

ManonmaniamSundaranar University (MSU), named after the famous Tamil Scholar Professor P. Sundaram Pillai, was established on 7 September, 1990 to cater to the long felt needs of the people of the three southern most districts of Tamil Nadu namely Tirunelveli, Tuticorin and Kanyakumari. It is situated in Tirunelveli District.

Objectives:

1. To find out the level of multiple intelligence and its dimensions of arts and science college students with respect to gender.
2. To find out the level of value perception and its dimensions of arts and science college students with respect to gender.
3. To find out the significant relationship, if any, between multiple intelligence and value perception of arts and science college students with respect to the following background variables.

a. Gender and

b. Educational Qualification of Students

Method and Procedure

The investigator used simple random sampling technique. 1000 arts and science college students were taken for this investigation. The investigator collected the data from all arts and science college students of ManonmaniamSundarnar University for measuring the multiple intelligence and value perception. For analyzing the data, the investigator used Mean, SD, Percentage, Analysis, t test, ANOVA test, Duncun test, Chi square test, Pearson's Product Moment Correlation and Factor Analysis.

Analysis and findings

Null Hypothesis-1

The level of multiple intelligence and its dimensions of arts and science college students with respect to gender.

LEVEL OF MULTIPLE INTELLIGENCE OF ARTS AND SCIENCE COLLEGE STUDENTS WITH RESPECT TO GENDER

Dimensions	Male (450)						Female (550)					
	Low		Moderate		High		Low		Moderate		High	
	N	%	N	%	N	%	N	%	N	%	N	%
Musical Intelligence	47	10.4	303	67.3	100	22.2	65	11.8	364	66.2	121	22
Bodily Or Kinesthetic Intelligence	46	10.2	301	66.9	103	22.9	62	11.3	366	66.5	122	22.5
Linguistic Intelligence	42	9.3	305	67.8	103	22.9	66	12	361	65.6	123	22.4
Logical or Mathematical Intelligence	44	9.8	302	67.1	104	23.1	64	11.6	364	66.2	122	22.2
Spatial visual intelligence	59	13.1	296	65.8	95	21.1	53	9.6	370	67.3	127	23.1
Interpersonal Intelligence	51	11.3	303	67.3	96	21.3	53	9.6	366	66.5	131	23.8
Intrapersonal Intelligence	44	9.8	305	67.8	101	22.4	63	11.5	365	66.4	122	22.2
Naturalistic Intelligence	45	10	296	65.8	109	24.2	61	11.1	371	67.5	118	21.5

(Low=below40, Moderate=Between 40-60, High=above 60 from the 't' scores)

It is inferred from the above table that 10.4%, 67.3% and 22.2% of male students have low, moderate and high level of musical intelligence respectively. Regarding female students, 11.8%, 66.2% and 22.0% have low, moderate and high level of musical intelligence respectively. 10.2%, 66.9% and 22.9% of male students have low, moderate and high level of bodily or kinesthetic intelligence respectively. Regarding female students, 11.3%, 66.5% and 22.2% have low, moderate and high level of bodily or kinesthetic intelligence respectively.

9.3%, 67.8% and 22.9% of male students have low, moderate and high level of linguistic intelligence respectively. Regarding female students, 12%, 65.6% and 22.4% have low, moderate and high level of linguistic intelligence respectively.

9.8%, 67.1% and 23.1% of male students have low, moderate and high level of logical or mathematical intelligence respectively. Regarding female students, 11.6%, 66.2% and 22.2% have low, moderate and high level of logical or mathematical intelligence respectively.

13.1%, 65.8% and 21.1% of male students have low, moderate and high level of spatial visual intelligence respectively. Regarding female students, 9.6%, 67.3% and 23.1% have low, moderate and high level of spatial visual intelligence respectively.

11.3%, 67.3% and 21.3% of male students have low, moderate and high level of interpersonal intelligence respectively. Regarding female students, 9.6%, 66.5% and 23.8% have low, moderate and high level of interpersonal intelligence respectively.

9.8%, 67.8% and 22.4% of male students have low, moderate and high level of intra personal intelligence respectively. Regarding female students, 11.5%, 66.4% and 22.2% have low, moderate and high level of intra personal intelligence respectively.

10%, 65.8% and 24.2% of male students have low, moderate and high level of naturalistic intelligence respectively. Regarding female students, 11.1%, 67.5% and 21.5% have low, moderate and high level of naturalistic intelligence respectively.

Null Hypothesis-2

The level of Value Perception and its dimensions of arts and science college students with respect to gender.

LEVEL OF VALUE PERCEPTION OF ARTS AND SCIENCE COLLEGE STUDENTS WITH RESPECT TO GENDER

Dimensions	Male (450)						Female (550)					
	Low		Moderate		High		Low		Moderate		High	
	N	%	N	%	N	%	N	%	N	%	N	%
Personal Value	75	16.7	322	71.6	53	11.8	87	15.8	399	72.5	64	11.6
Educational Value	70	15.6	325	72.2	55	12.2	92	16.7	393	71.5	65	11.8
Physical Value	67	14.9	326	72.4	57	12.7	95	17.3	391	71.1	64	11.6
Moral Value	77	17.1	318	70.7	55	12.2	86	15.6	398	72.4	66	12
Cultural Value	39	8.7	312	69.3	99	22	61	11.1	372	67.6	117	21.3
Social Value	77	17.1	321	71.3	52	11.6	80	14.5	398	72.4	72	13.1
Literary Value	44	9.8	311	69.1	95	21.1	57	10.4	377	68.5	116	21.1
Aesthetic Value	45	10	357	79.3	48	10.7	59	10.7	435	79.1	56	10.2

(Low=below40, Moderate=Between 40-60, High=above 60 from the 't' scores)

It is inferred from the above table that 16.7%, 71.6% and 11.8.9% of male students have low, moderate and high level of value perception of personal value respectively. Regarding

female students, 15.8%, 72.5% and 11.6% have low, moderate and high level of value perception of personal value respectively.

15.6%, 72.2% and 12.2% of male students have low, moderate and high level of value perception of educational value respectively. Regarding female students, 16.7%, 71.5% and 11.8% have low, moderate and high level of value perception of educational value respectively.

14.9%, 72.4% and 12.7% of male students have low, moderate and high level of value perception of physical value respectively. Regarding female students, 17.3%, 71.1% and 11.6% have low, moderate and high level of value perception of physical value respectively.

17.1%, 70.7% and 12.2% of male students have low, moderate and high level of value perception of moral value respectively. Regarding female students, 15.6%, 72.4% and 12.0% have low, moderate and high level of value perception of moral value respectively.

8.7%, 69.3% and 22% of male students have low, moderate and high level of value perception of cultural value respectively. Regarding female students, 11.1%, 67.6% and 21.3% have low, moderate and high level of value perception of cultural value respectively.

17.1%, 71.3% and 11.6% of male students have low, moderate and high level of value perception of social value respectively. Regarding female students, 14.5%, 72.4% and 13.1% have low, moderate and high level of value perception of social value respectively.

9.8%, 69.1% and 21.1% of male students have low, moderate and high level of value perception of literary value respectively. Regarding female students, 10.4%, 68.5% and 21.1% of female students have low, moderate and high level of value perception of literary value respectively

10%, 79.3% and 10.7% of male students have low, moderate and high level of value perception of aesthetic value respectively. Regarding female students, 10.7%, 79.1% and 10.2% of female students have low, moderate and high level of value perception of aesthetic value respectively

Null Hypothesis 3

There is no significant relationship between multiple intelligence and value perception of arts and science college students.

RELATIONSHIP BETWEEN MULTIPLE INTELLIGENCE AND VALUE PERCEPTION OF ARTS AND SCIENCE COLLEGE STUDENTS

Variable	N	df	Calculated value of r	Remarks
Total Sample	1000	988	0.250	S

(At 5% level of significance the table 'r' value is 0.062)

It is inferred from the above table that there is significant relationship between multiple intelligence and value perception of arts and science college students.

Null Hypothesis 4

There is no significant relationship between multiple intelligence and value perception of male students.

RELATIONSHIP BETWEEN MULTIPLE INTELLIGENCE AND VALUE PERCEPTION OF MALE STUDENTS

Variable	N	df	Calculated value of r	Remarks
Male	450	448	0.621	S

(At 5% level of significance the table 'r' value is 0.092)

It is inferred from the above table that there is significant relationship between multiple intelligence and value perception of male students.

Null Hypothesis 5

There is no significant relationship between multiple intelligence and value perception of female students.

RELATIONSHIP BETWEEN MULTIPLE INTELLIGENCE AND VALUE PERCEPTION OF FEMALE STUDENTS

Variable	N	df	Calculated value of 'r'	Remarks
Female	550	548	0.295	S

(At 5% level of significance the table 'r' value is 0.080)

It is inferred from the above table that there is significant relationship between multiple intelligence and value perception of female students.

Null Hypothesis 6

There is no significant relationship between multiple intelligence and value perception of UG students.

RELATIONSHIP BETWEEN MULTIPLE INTELLIGENCE AND VALUE PERCEPTION OF UG STUDENTS

Variable	N	df	Calculated value of 'r'	Remarks
UG	500	498	0.455	S

(At 5% level of significance the table 'r' value is 0.088)

It is inferred from the above table that there is significant relationship between multiple intelligence and value perception of UG students.

Null Hypothesis 7

There is no significant relationship between multiple intelligence and value perception of PG students.

RELATIONSHIP BETWEEN MULTIPLE INTELLIGENCE AND VALUE PERCEPTION OF PG STUDENTS

Variable	N	df	Calculated value of 'r'	Remarks
PG	500	498	0.371	S

(At 5% level of significance the table 'r' value is 0.088)

It is inferred from the above table that there is significant relationship between multiple intelligence and value perception of PG students.

Conclusion

It is concluded that the multiple intelligence and value perception of arts and science college students affiliated to Manonmaniam Sundaranar University with respect to the background variables gender and educational qualification are significantly correlated. The multiple intelligence and its dimensions of arts and science college students are moderate

with respect to gender. The value perception and its dimensions of arts and science college students are moderate with respect to gender. So the investigator opines that the teachers can increase the student's multiple intelligence and value perception level by using special techniques and methods of teaching. A potential approach to any kind of intellectual activity in education should be followed.

Education is a powerful instrument to fight out the parochial, communal, and narrow minded and sectarian tendencies by fostering better understanding and by widening the mental horizons of all people concerned. Different educational, sociological and propagandistic agencies should work with responsibility and systematically to inculcate right values and proper attitudes in order to develop the sense of basic knowledge, values and competencies. Colleges have to play a vital role in fostering, multiple intelligence and value perception of arts and science college students through proper organisation of the educational programmes.

Reference

Gardner, H. (1983). *Frames of Mind: the Theory of Multiple Intelligences*. New York: NY: Basic Books.

Gawande E. N. (2002). *Value Oriented Education (Vision for Better Living)*. New Delhi: Sarup and Sons.

Gardner, H. (1999). *Intelligence Reframed: Multiple Intelligences for the 21st century*. New York: Basic Books.

Central Board of Secondary Education (CBSE) (1997 and 2003). *Value Education, a Handbook for Teachers*. New Delhi.

Welfare facilities and its influence on Employees' Morale

R. Kandavel*

Dr. D Sakthivel**

R. Gayathri Chitra***

Abstract

Morale is a major concept in today's business world; most of the organizations are concentrating how to develop their employees' morale level, because the secret of successful organizations is the best efficient employees. Welfare facilities increase the employee morale. This study is an attempt to understanding and measuring welfare facilities impacting the morale of employees' in organizations. The data is collected from structured questionnaire. Sample size is 110 and also Descriptive research study is used as a research design and followed simple random sampling method. The respondents are the employees from the Business process outsourcing (BPO) industries in Chennai. In this study Pearson's correlation and regression are used for analysis. Result of this study is Majority of employees found that welfare facilities is beneficial for their employees' morale and welfare facilities positively influencing the employees' morale.

Keywords: *Welfare facilities, Employees' Morale.*

Introduction

Employee morale describes the overall outlook, attitude, satisfaction, and confidence that employees feel at work. When employees are positive about their work environment and believe that they can meet their most important needs at work, employee morale is positive or high. If employees are negative and unhappy about their workplace and feel unappreciated and as if they cannot satisfy their goals and needs, employee morale is negative or low. Employee morale is defined by the employee's outlook, optimism, self-concept, and assured belief in themselves and their organization, its mission, goals, defined path, daily decisions, and employee appreciation. Faith in self and faith in their organization are both important factors in positive employee morale.

Morale may be defined as an intangible concept that refers to how positive and supportive a group feels toward the organization to which it belongs (Haddock, 2010) and the special feelings members of the group share with others, such as trust, self-worth, purpose, pride in one's achievement, and faith in the leadership and organizational success. Seroka (2009) defines employee morale as the general level of confidence or optimism experienced by a person or a group of people, especially if it affects discipline and willingness. According to Finger (2005), morale is more influenced from the top down (that is by leadership) than from the bottom up. High or low morale is not just made up of a single factor; it is a combination of related factors. In addition, morale may be thought of not only as a group phenomenon but also an individual matter. Group morale depends on the morale of each individual in a group.

* Doctorial Scholars, Dept. of Business Administration, Annamalai University, Tamilnadu, India

** Assistant Professor, Dept. of Business Administration, Annamalai University, Tamilnadu, India

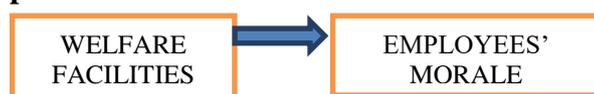
*** Doctorial Scholars, Dept. of Business Administration, Annamalai University, Tamilnadu, India

Welfare Facilities: Management must pay due attention to the well-being of the employees' and provide welfare facilities like canteens, health services, education, housing, transport, creche facilities for betterment of his employees', welfare facilities boost the employees' morale.

Review of Literature

Mazin (2010) stated that high employee morale leads to on-time recording of employees for work, and improving communication, recruitment and originality of employees. He further specifies that high employee morale keeps retention of employees in the organization. **Akintayo (2012)** reveals significant relationships among working environment, workers morale and perceived productivity. The study also finds that supple working environment and workers morale have significantly contributed to workers productivity. **Tiwari (2014)** stated that, morale is an employee's attitude toward his or her job, employer, and colleagues. Employee morale as the psychological state with esteem to satisfaction, confidence and resolution; the attitude of an individual or group of employees. Employee morale within an organization has a through impact on the satisfaction level of its customers and the company's ultimate success. Employee facilities are rarely portable and it is only natural for employees to stay for long periods of time at organizations providing good benefits (**Premarathna and Perera, 2015**). (**Kahneman and Tversky, 1979**) studied employee welfare facilities has been taken as independent variable and assumed that these variables has a relationship with employee retention, its effects explain the attachment towards the welfare benefits by employees in the decision of retaining with the employer than the monetary wages. (**Olsen, 2002**) that is singling out the fringe benefit component. Employees may experience the value as larger than a similar incremental in money wages. (**Kahneman, Knetsch and Thaler, 1990**) may make some employees more attached to fringe benefits than the equivalence in money.

Conceptual Framework



Objectives of the Study

- To analyze welfare facilities and its relationship with employees' morale.
- To assess the influence of welfare facilities on employees' morale.
- To offer suggestions to improve welfare facilities which leads to the employees' morale?

Hypotheses of the Study

H₀₁: There is no significant relationship between Welfare facilities and Employees' morale.

H₀₂: There is no significant influence of Welfare facilities on Employees' morale.

Research Methodology

The research design used is descriptive in nature the procedure using questionnaire, and analyzes these to make critical evaluation of the performance.

Methodology adopted

Data is collected through primary and secondary sources

Primary Source of data

Data is collected using Questionnaire Method.

Secondary source of data

The data is collected from reputed journals and using internet websites.

Sampling Design

Simple Random Sampling Techniques

Universe of Study:

Universe covers the whole defined finite on which the study is based. The whole study is carried in BPO industries. The universe was all the employees of BPO industries in Chennai.

Sampling units

The sampling units of the research study within the organization, Sample size of the research is 110 samples.

Research Tool

The sample has been collected through Questionnaire.

Analysis and Interpretation

H₀: There is no significant relationship between welfare facilities and employees' morale.

Table: 1

		Employees' morale
Welfare facilities	Pearson Correlation	0.885
	Significance(2-tailed)	0.001*
	N	110

Source: Primary data; *significant at one percent level.

In order to test the relationship, Pearson correlation was applied. From the result it is observed that there is positive correlation between independent variable and employees' morale. The welfare facilities has the r value of (r=0.885) from the p value in the correlation matrix, it is observed that the level of independent variables relationship was significant at 0.01 level. Hence the hypothesis is rejected. So it is concluded that there is significant strong relationship between welfare facilities and employees' morale.

H₀: There is no significant influence of Welfare facilities on Employees' morale.

Table: 2

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.885	.782	.782	2.318	1545.670	.000*

a. Dependent Variable: Employees' Morale

b. Predictors: (Constant), Welfare facilities

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	2.245	.362		6.195	.001
Employees' Morale	4.388	.112	.885	39.315	.001*

Source: Primary data computed; *significant at one percent level.

Above the table indicates that the influences of welfare facilities on employees' morale in the business process outsourcing (BPO). Here, welfare facilities are considered as independent variables and employees' morale is considered as dependent variables.

Further, Linear regression is employed, to test the above stated hypothesis. In the regression model, the p-value is found to be significant at one percent level. Hence, the stated hypothesis is rejected. The measure of strength of association in the regression analysis is given by the co-efficient of regression determination which is denoted by the adjusted R-square value. The adjusted R-square value is found to be 0.782 which implied that 78.2 percent of the variation on the level of dependent variable is explained by the independent variables.

From the regression equation, it is inferred that the welfare facilities is positively influencing the employees' morale on business process outsourcing (BPO).

Findings of the Study

From the Pearson Correlation analysis, the employees' morale r value is $r=0.885$ from the p value level was significant at 0.01 level. So it is concluded that there is significant strong relationship between welfare facilities and employees' morale.

From the regression analysis, the adjusted R-square value is found to be 0.782 which implied that 78.2 percent of the variation on the level of dependent variable is explained by the independent variables. From the regression equation, it is inferred that the welfare facilities is positively influencing the employees' morale.

Suggestions

Based on the study, the following suggestions are proposed.

- Management should provide better incentives to employees that would result in high morale.
- Management should provide opportunities for career development in the form of higher education.
- Enhance the work environmental standards to the extent that they are considered to be the best.
- Medical facilities should be given so as to minimize the absenteeism and to keep the employees more immunized and fit enough.
- Employee counseling, various health camps, hospitalization facilities should be much more improved by conducting the health camps at least once in a month.
- To reduce the superior and coworkers gap management have to indoor games and recreational activities.

Conclusion

In an organization, welfare facilities are an attitude of emotional readiness, which has impact on the employees' morale. It is evident from the literature review that when an organization motivates its employees with welfare facilities then the resultant morale in the organization will be equally high. Through the proposed study that welfare facilities directly and indirectly influencing that employee morale is identified. Researcher suggested that the management can take required steps to improve the employee morale by following the recommendations that were suggested and introduce the schemes by considering welfare facilities associated with the employee morale.

Bibliography

- [1] Yoder, Dale, Personnel Management And Industrial Relations, 1972, P. 527
- [2] Flippo, Edwin B., Principles of Personnel Management, 1961, P. 416-17
- [3] Barbara J. Fretwell, (2002): Promoting Organisational Competency: A Solution to increasing employee Morale and Customer Satisfaction.
- [4] Patel Bhooru and Tarjani Desai (2013) Effect of Workplace fun on employee Morale and Performance. International Journal of Scientific Reference.
- [5] Akintayo, D., (2012), "Working environment, workers' morale and perceived productivity in industrial organizations in Nigeria", Education Research Journal Vol.2, Issue-3, pp.87-93.
- [6] Mazin, R., (2010), "The effects of high morale on employee performance", *www.ehow.com*. Retrieved from <http://www.ehow.com>.
- [7] Tiwari, U. (2014), A Study on Employee Welfare Facilities and Its Impact on Employee Efficiency at VindhyaTelelinks Ltd Rewa (M.P.) India. *Abhinav International Monthly Refereed Journal of Research in Management and Technology*. Vol. 3, No. 11, Pp. 1-7.
- [8] Premarathne, M. A. D. T., & Perera, G. D. N. (2017, March). The Effect of Welfare Facilities on Employee Retention in a Selected Company in Sri Lanka. In Proceedings of International HR Conference (Vol. 2, No. 1). Kelaniya Journal of Human Resource Management Volume 12, Number 02 - July 2017 146
- [9] Suresha, B. (2007). Study on employee welfare measures in arignar anna sugar mills, Tanjore. 67-68.
- [10] Ahmad, R., & Scott, N. (2015). Fringe benefits and organisational commitment: the case of Langkawi hotels. *Tourism review*, 70(1), 13-23.

To Study the Relationship between Liquidity and Profitability of Selected Companies of Food Industry

Kamaljeet Singh & Rajwinder Singh*

Abstract

The present research paper entitled, Liquidity and profitability of selected companies of food industries, was done to study the relationship between liquidity and profitability of selected companies of food industry. Liquidity has been taken as an important tool to analyze the sustainability and liquidity position of any enterprise that may also help to derive maximum profits at minimum cost. Profitability may be the return earned on the total assets of the company. Five food companies were selected from BSE index on the basis of availability of data. The study was carried out for five years period from 2007-12. Company wise relationship between liquidity and profitability was determined by calculating the correlation between current ratio and return on investment (ROI) and between quick ratio and return on investment (ROI) The correlation between current ratio and ROI of the Britannia, Lakshmi energy and foods, LT foods were higher positively correlated among all the companies and KRBL was negatively correlated among all the companies. Kohinoor Foods was neutral correlated. There were no significance relationship between ROI and current ratio and ROI and quick ratio. Correlation between quick ratio and return on investment (ROI) of the Britannia and LT food were positively correlated and on the other hand, there was a negative correlation between quick ratio and return on investment among Lakshmi Energy & foods and KRBL respectively.

Keywords: Liquidity, Profitability, Current Ratio, Return on Investment, Quick Ratio

Introduction

The Government of India has opened up the floodgates for multinationals to participate in the domestic market of the country since LPG. In such a distorted economic environment in India, the private sector investment was automatically increased. But the production capacity and growth rate in the private sector did not increase promptly due to under-utilization and poor financial management. Improper management of working capital in terms of liquidity, solvency, operating efficiency and profitability is accountable for inadequate financial performances (Bhunia 2006).

Liquidity

Liquidity is a precondition to ensure that firms are able to meet its short-term obligations. The Liquidity position in a company is measured based on the 'current ratio' and the 'quick ratio'. The Current ratio establishes the relationship between current assets and current liabilities. Normally High current ratio is considered an indicator of the firm's ability to promptly meet its short term Liabilities. The quick ratio establishes a relationship between quick or liquid assets and current liabilities. An asset is liquid if it can be converted into cash immediately or reasonably soon without a loss of value. Low liquidity leads to the inability of a company to pay its creditors on time or honors its maturing obligations to suppliers of credit, services and goods. This could result in losses on account of non-availability of supplies and lead to possible insolvency. Also, the inability to meet the short

*School of Management Studies, Punjabi University Patiala, India

term liabilities could affect the company's operations and in many cases it may affect its reputation as well. Inadequate cash or liquid assets on hand may force a company to miss the incentives given by the suppliers of credit, services, and goods as well. Loss of such incentives may result in higher cost of goods which in turn affects the profitability of the business. Every stakeholder has interest in the liquidity position of a company. Suppliers of goods will check the liquidity of the company before selling goods on credit. Employees should also be concerned about the company's liquidity to know whether the company can meet its employee related obligations, i.e. salary, pension, provident fund, etc. Thus, a company needs to maintain adequate liquidity (Khan and Jain 2006).

Profitability

Profitability means ability to make profit from all the business activities of an organization, company, firm, or an enterprise. It shows how efficiency the management can make profit by using all the resources available in the market. However the 'Profitability' is not synonymous to the term 'Efficiency'. Profitability is an index of efficiency; and is regarded as a measure of efficiency and management guide to greater efficiency. Though, profitability is an important yardstick for measuring the efficiency, the extent of profitability cannot be taken as final proof of efficiency. Sometimes satisfactory profits can mark inefficiency and conversely, a proper degree of efficiency can be accompanied by an absence of profit. The net profit figure simply reveals a satisfactory balance between the values receive and value given. The change in operational efficiency is merely one of the factors on which profitability of an enterprise largely depends. Moreover, there are many other factors besides efficiency, which affect the profitability. Sometimes the terms Profit and Profitability are used interchangeably. But in real sense, there is difference between the two. Profit is an absolute term whereas the profitability is relative concept. However, they are closely related and mutually interdependent, having distinct roles in business.

Profit refers to the total income earned by the enterprise during the specified period, while profitability refers to the operating efficiency of the enterprise. It is the ability of the enterprise to make profit on sales. It is the ability of enterprise to get sufficient return on the capital and employees used in the business operation.

Need of the study

The Indian food industry is poised for huge growth, increasing its contribution in world food trade every year. In India, the food sector has emerged as a high-profit sector on the back of the scope it offers for value addition, particularly with the food processing industry getting recognized as a high-priority area. Accounting for about 32 per cent of the country's total food market, the food processing industry is one of the largest industries in India and is ranked fifth in terms of production, consumption, export and expected growth. The total food production in India is likely to double in the next 10 years with the country's domestic food market estimated to reach US\$ 258 billion by 2015. The role of the Indian government has been instrumental in the growth and development of the industry. The government through the Ministry of Food Processing Industries (MoFPI) is making all efforts to encourage investments in the sector. It has approved proposals for joint ventures (JV), foreign collaboration industrial licenses and 100 per cent export oriented units.

Objectives

- To study the relationship between liquidity and profitability
- To Study the relationship between current ratio and Return on investment (ROI)

- To Study the relationship between quick ratio and Return on investment (ROI)

Review of literature

Reddy (2015) examine to analyze the financial position of the company in terms of liquidity and profitability. In business, cash is important thing, without cash, company cannot survive and to take advantage of business opportunities, it is necessary to maintain liquidity position to overcome the difficulties. As the company desires to have more and more current assets and least current liabilities, the profitability of the organization may be adversely affected. In this research paper, I try to evaluate the liquidity and profitability trade off in Tata Steel Limited.

Kumar (2014) concentrates on leverage and its relationship between profitability in Bata India Limited. In this present research paper, an attempt is made to analyze the performance of Bata India Limited, to analyze the leverage analysis in Bata India and to study the relationship between leverage and profitability in Bata India Limited. The exploratory research design is adopted in this study which employs secondary data. The financial statements of Bata India Limited have been collected over a period of 7 years (2005-06 to 2012-13). The data collected is analyzed by the percentages, averages, ratios and Correlation analysis tools reveals that the research evidence of the study indicates that, that degree of operating leverage is statistically significant positive correlation with the ROI. It is observed that degree of financial leverage is positively correlated with the ROI. It means that degree of financial leverage of Bata India was not at optimum level. It is suggested to Bata to revise its capital structure, which should include the optimum blend of equity and borrowed funds so that it has positive impact on Return on Investment. More over degree of combined leverage is positively correlated with ROI of Bata India. The financial performance of the Bata India is satisfactory

Ajanthan (2013) investigated the relationship between liquidity and profitability of trading companies in Sri Lanka. Analysis was based on data extracted from annual reports and accounts of the companies for the relevant period. Correlation and regression analysis respectively were employed to examine the nature and extent of the relationship between the variables and determine whether any cause and effect relationship between them. The study covered 08 listed trading companies in Sri Lanka over a period of past 5 years from 2008 to 2012. Correlation & regression analysis and descriptive statistics were used in the analysis and findings suggest that there is a significant relationship exists between liquidity and profitability among the listed trading companies in Sri Lanka. However, the findings of this paper are based on a study conducted on the selected companies. Hence, the results are not generalizable to non-quoted companies. Secondly, the sample only comprises trading companies. Therefore, the results are valid for this sector

Research Hypothesis

- There will be no significant relationship between liquidity and profitability
- There will be no significant relationship between current ratio and overall profitability.
- There will be no significant relationship between quick ratio and overall profitability.

Research Methodology

The population for the study consisted of all food companies listed in BSE index. The sample consists of total of five food companies from BSE index. The companies were selected on basis of availability of data. The study was carried out for the period from 2007- 2008 to 2011-2012. Data was collected from annual reports of the companies and from some websites such as moneycontrol.com, outlookmoney.com and money.rediff.com.

Only those companies were selected for the purpose of the study for which data for completed 12 months from 2007-2008 to 2011-2012 was available. The data in form of various financial ratios for sample companies was first recorded in the master table and then subsequent statistical tools for the analysis were applied.

Analysis and interpretation of financial statements was done to study the various components of liquidity and profitability of the selected companies, which in turn helped in studying the relationship between liquidity and profitability. To study the company wise relationship between liquidity and profitability, correlation between current ratio and return on investment (ROI) and between quick ratio and return on investment (ROI) was calculated. Chi square was applied to study the relationship between liquidity and profitability. Following were the tools use to analyze the secondary data.

Ratio analysis

A ratio is simple expression of a relationship of one number to another. Ratio analysis is technique of analysis and interpretation of financial statements. It is a process of establishing and interpreting various ratios for helping in making certain decisions. Financial ratios indicate the financial position of a company. These are an important tool to analyze a company's financial health. For the measurement of liquidity and profitability of selected companies, analysis of relevant ratios is reliable tool. Ratios are convenient means of analysis and expression of various operational aspects of the companies.

Liquidity ratios

Liquidity ratios measure the ability of a company to meet its short term obligations and reflect the short terms financial strength solvency of the company. These ratios are used to measure the liquidity position of the company. These ratios give an insight about the present cash solvency of the companies. They compare short term liabilities of the company with the funds that are used to pay off those liabilities. A company must have adequate working capital to run its day to day operations liquidity ratios were used in this study are:

Current ratio

Current ratio is measure of company's short term solvency. It is calculated by dividing current assets by current liabilities. It indicates availability of currents assets for every one rupee of current liabilities. Current ratio can have positive as well as negative impact on the profitability of the company. More invest mention current assets than required can adversely affect the profitability of the company but if the investment in current assets is less required, it can endanger the short term solvency of the company. Thus current ratio is a very important ratio as it tells about level of current assets in proportion to the level of current liabilities as follows:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Libilties}}$$

Quick ratio

The quick ratio establishes the relationship between quick or liquid assets and current liabilities. Quick assets mean current assets excluding inventory. The exclusion of inventory is for the reason that it is not easily and readily convertible into cash. A high quick ratio is an indication that the firm has liquidity and easiness to meet the current obligations. On the other hand, if the quick ratio is low, it is a clear indicator of liquidity. The quick ratio is more rigorous and penetrating test of liquidity position when compared to the current ratio. It is calculated as follows

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Profitability ratios

The profitability ratios are calculated to measure the operating efficiency of the company. Besides management of the company, creditors and owners are also interested in the profitability of the company. Creditors want to get interest and repayment of principal regularly owners want to get a required rate of return on their investment. This is possible only when the company earns adequate profits. The profitably ratios are:

Return on investment

Return on investment is the relationship between net profits (after interest and tax) and the proprietor's funds. The two basic components of ROI are net profits and shareholders' funds include equity share capital, preference share capital, and free reserves such as share premium, revenue reserves, retained earnings and surplus less accumulated losses, if any. Net profits are visualized from the viewpoints of the owners, i.e. shareholders. Thus net profits are arrived at after deducting interest on long term borrowings and income tax, because those will be the only profits available for shareholders (Gupta and Sharma 2006). Return on investment is calculated as follows:

$$\text{Return on investment (in per cent)} = \frac{\text{Net profit (After interest and tax)}}{\text{shareholders' funds}}$$

Return on capital employed

Return on capital employed (ROCE) establishes the relationship between profits and capital employed. It is most widely used measure to gauge the overall profitability and efficiency of the business. Profits here refer to profit after Tax plus interest whereas capital employed has been taken as 'net capital employed i.e. total assets used in the business less current liabilities. Return on capital employed calculated is as follows

$$\text{Return on capital employed} = \frac{\text{Profit after tax plus interest}}{\text{net capital employed}}$$

Correlation Analysis

Correlation Analysis is a statically tool used to describe the degree to which one variable is related to another. The co-efficient of correlation (r) measures the degree of relationship between two series. Following is the formula to calculate of correlation:

FORMULA

$$r = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{N\sum X^2 - (\sum X)^2(N\sum Y^2 - (\sum Y)^2)}}$$

Sign r indicates the direction of the relationship between variables. The value of r ranges from -1 to +1. If r = -1, there is inverse relationship between the variables and if r = +1, there is direct relationship between variables

Testing the significance of correlation coefficient

To test the hypothesis that the correlation coefficient of the population is zero, i.e. the variables in the population are uncorrelated, the following test was applied:

FORMULA

$$t = \frac{r}{\sqrt{1-r^2}} \cdot \sqrt{n-2}$$

Here t is based on (n-2) degrees of freedom. if the calculated value of t exceeds t(0.05) for (n 2)degrees of freedom , the value of r is said to be significant at 5% level of significance. If t<t(0.05, the data are consistent with the hypothesis of an uncorrelated population(Gupta 2005)

Chi square test

Chi square test was applied to check the relationship between liquidity and profitability and between profitability and operating risk on overall basis. To study the relationship between current ratio and return on investment and between quick ratio and return on investment, all 25 values of respective variables for all the companies and for all the years were first arranged in ascending order and thereafter median value was found. After finding the median value all 25 values were assigned 'high' or 'low' indicators by comparing them with the median value. Thereafter, a table was prepared showing association between the variables, was prepared to study the relationship between respective variables. Chi square test was applied on that table with the null hypothesis being that there is no significant relationship between variables. Alternate hypothesis was that there is significant relationship between the variables. Following formula was used for calculating chi square:

FORMULA

$$\text{Chi square} = \sum_{i=1}^k [(O_i - E_i)^2 / E_i]$$

With (r-1) (c-1) degrees of freedom

Where O (i) = Observed frequency

E (i) =expected frequency

r= number of rows

c= number of columns

Result and discussion

Company wise relationship between liquidity and profitability was determined by calculating the correlation between current ratio and return on investment (ROI) and between quick ratio and return on investment (ROI). Thereafter, t-test was applied to check the significance of the correlation coefficient at 5% level of significance and null hypothesis being that there is no significant correlation between respective variables i.e. the variables are uncorrelated in the population. Following table shows the coefficients of correlation between current ratio and return on investment (ROI) and between quick ratio and return on investment.

Table 1: Coefficient of correlation between Current ratio and Return on investment (ROI) and Quick Ratio and Return on investment (ROI)

Sr. No	Name of the company	Correlation between Current ratio and Return on investment(ROI)	Correlation between Quick Ratio and Return on investment (ROI)
1	Britannia	0.64	0.63
2	Lakshami Energy and foods	0.14	-0.29
3	Kohinoor foods	-0.05	0.19
4	KRBL	-0.52	-0.79
5	LT foods	0.11	0.58

According to the calculated value of first company the table 1 shows that the correlation between Current ratio and ROI of the Britannia is (r = 0.64) which is higher degree of positive correlation. It showed that increase in current ratio was accompanied by increase in ROI. The above table shows that the correlation between quick ratio and ROI is (r = 0.63 which is higher degree of positive correlation. It shows that increase in quick ratio

is accompanied by increase in ROI. Data of twenty six enterprises examined the relationship between liquidity of firm and profitability, found that there was positive relationship between firm's liquidity and profitability (Saleem & Rehman, 2011)

According to the calculated value of second company table 1 shows that the correlation between current ratio and ROI of Lakshmi Energy and foods is ($r = 0.14$) which was positive correlation. It shows that increase in current ratio is accompanied by increase in ROI. Coefficient of correlation between quick ratio and ROI is ($r = -0.29$) showing low degree of negative correlation. It showed that decreases in current ratio leads to increase in ROI and vice versa

According to the calculated value of third company table 1 shows that the correlation between current ratio and ROI of Kohinoor foods was ($r = -0.05$) which show negative correlation. It shows that there is inverse relationship between liquidity and ROI i.e. increase in current ratio is accompanied by decrease in ROI and vice versa. The correlation between quick ratio and ROI is ($r = 0.195$) indicating a low degree of positive correlation. It becomes clearly opposite from the negative correlation between current ratio and ROI and positive correlation between quick ratio and ROI that non quick assets are adversely affecting the profitability of the company.

According to the calculated value of fourth company table 1 reveals that the correlation between current ratio and ROI of KRBL is ($r = -0.52$) which was moderate degree of negative correlation. It showed that decreases in current ratio leads to increase in ROI and vice versa. It has been true for most of the period under consideration i.e. current ratio and ROI are not following a consistent co movement. The correlation between quick ratio and ROI is ($r = -0.79$) indicating a high degree of negative correlation. It shows that increase in quick ratio is accompanied by a decline in ROI and vice versa. There was significant negative relationship between the firm's profitability and liquidity when it is measured by current ratio (Eljelly 2004).

According to the calculated value of fifth company the above table 1 showed that the correlation between current ratio and ROI of the LT Foods is 0.11 which was higher degree of positive correlation. It shows that increase in current ratio is accompanied by increase in ROI. The above table shows that the correlation between quick ratio and ROI is ($r = 0.58$) which is higher degree of positive correlation. It showed that increase in quick ratio is accompanied by increase in ROI.

Relationship between liquidity and profitability (overall)

Chi-square test was applied to study the relationship between liquidity and profitability. Association of both of the liquidity measures with ROI tested separately.

Table 2: Association between Current Ratio and ROI

ROI \ Current Ratio	High	Low	Total
High	8	9	17
Low	6	2	8
Total	14	11	25

The calculated value of chi-square for table 2 was found to be 3.91 which were greater than its table value of 3.84 at 5% level of significance. Therefore null hypothesis was rejected and it was concluded that there is relationship between Current ratio and ROI on the overall basis. The association between firm size and profitability of all branches of

Bank of Ceylon and Commercial Bank of Ceylon Ltd and there is a positive relationship firm size and profitability in Bank of Ceylon (Velampy and Nimalathasan 2010).

Table 3: Association between Quick Ratio and ROI

ROI \ Current Ratio	High	Low	Total
High	9	2	11
Low	6	8	14
Total	15	10	25

The calculated value of chi-square for table 3 was found to be 0.434 which was less than its table value of 3.84 at 5% level of significance. Therefore null hypothesis was accepted and it was calculated that there was no relationship between quick ratio and ROI on the overall basis. Correlation analysis and descriptive statistics were used in the analysis and findings suggest that there was no significant relationship between liquidity and profitability among the listed manufacturing firms in Sri Lanka (Nires2012).

Conclusion

The Indian food industry is poised for huge growth, increasing its contribution in world food trade every year. In India, the food sector has emerged as a high-profit sector on the back of the scope it offers for value addition, particularly with the food processing industry getting recognized as a high-priority area. The profitability of all the companies has been showing improvement over the years. The food industry sectors with the shortest working capital cycles relatively higher rates of profitability were obtained (Bieniasz and Golas 2011). It has been possible due to a considerable increase in sales revenue of all the companies over the period of consideration. All the companies under consideration liquidity position of Kohinoor foods was the best since both of the liquidity ratios were above their respective standards. Current ratio and quick ratio of Britannia were below their standards level for all the years under consideration.

The correlation between liquidity and profitability was the highest in case of Britannia which was having a high degree of correlation between Current ratio and ROI as well as quick ratio and ROI and the values of correlation in both cases were found to be significant at 5% level of significance. It showed that liquidity is positively affecting the profitability of the company. The correlation between current ratio and ROI and between ROI and Quick ratio was the lowest in KRBL. As both the coefficient of correlation were showing negative correlation between liquidity and profitability. As both correlation coefficients were found to be non significant at 5% level of significance.

Limitations of study

1. The accuracy of the research is limited by knowledge of the researcher
2. As the study was completed in a short time, the time factor acted as a considerable limit on the scope and extensiveness of the study.
3. The study being based on data available from financial statements of the company suffered form same limitations that are inherent in these statements.

References

Afeef M (2011) Analyzing the Impact of Working Capital Management on the Profitability SME's in Pakistan. *Intl J Bus and Social Sci*34: 15-26.

Ahmadi M, Arasi I S and Garajafary M (2012) Studying the relationship between working capital management and profitability at Tehran Stock Exchange: A Case Study of Food Industry. *Res J Appl Sci Engg Tech*4: 1868-74.

- Ajanthan A (2013) A nexus between liquidity & profitability: a study of trading companies in Sri Lanka. *Eur J Bus and Mgmt.* **5**: 221-37.
- Bhavet (2011) Management of liquidity – A case study of Tisco Ltd. *Intl J Res IT Mgmt* **1**:149-58.
- Bhunia A (2006). Liquidity Management of public sector iron and steel enterprises in India. *Peleman Industries Inc, U.S.A.* **Pp** 4
- Bhunia A and Brahma S B (2011) Importance of liquidity management on profitability. *Asian J Bus Mgmt.* **3(2)**: 108-17.
- Bieniasz A and Golas Z (2011) The influence of working capital management on the food industry enterprises profitability. *Contemporary Econ* **5**: 68-81.
- Egbide B C, Uwuigbe O and Uwalomwa U (2013) Liquidity management and profitability of manufacturing companies in Nigeria. *IOSR J Business Mgmt.* **Pp** 13-21.
- Eljelly A (2004) Liquidity- profitability trade-off: An empirical investigation in an emerging market. *J Intl Comm and Mgmt.* **14**: 48-61.
- Gupta S K and Sharma R K (2006) Management accounting Kalyani Publisher New Delhi India **Pp** 4.63.
- Gupta S P (2005) Statistical methods Sultan Chand and Sons New Delhi India **Pp** 923
- Khan M Y and Jain P K (2006) Financial management Tata McGraw Hill New Delhi India **Pp** 14.6
- Kumar R M (2014) An empirical study on relationship between leverage and profitability in Bata India Limited. *Intl J Adv Res Computer Sci Mgmt Studies.* **2**:1-9.
- Lartey V C, Antwi S and Boadi E K (2013) The relationship between liquidity and profitability of listed banks in Ghana. *Intl J Bus Social Sci* **4**: 48-56.
- Niresh J A (2012) Trade-off between liquidity & profitability: A study of selected manufacturing firms in Sri Lanka. *J Arts Sci Comm* **3**:34-49.
- Qasim Saleem & Ramiz Ur Rehman. (2011). Impacts of liquidity ratios on profitability. *Interdisciplinary J of Res in Bus*, **1**: 95-98
- Reddy B M (2015) Trade off between liquidity and profitability. *Intl J Comm Bus Mgmt* **4**: 1096-1100.
- Velnampy T and Nimalathan B (2010) Firm size on profitability: A comparative study of Bank of Ceylon and Commercial Bank of Ceylon Ltd in Sri Lanka. *Global J Mgmt Business Res* **10**: 96–100.

Photo Elastic Behaviour of Ionic Crystals

Madhu Rani*

Abstract

Photoelastic effect in crystals has been the subject of many experimental and theoretical investigations. It is associated with electronic polarizabilities and light scattering in crystals. Photo elastic constant is related to density derivative of refractive index. It is related to optical damage of solids by high LASER and self focusing of beam. The derivatives of electronic dielectric constant with respect to volume and lattice parameters are studied. A theoretical analysis of this effect requires strain derivatives of electronic polarizabilities which are difficult to find from model. The photo elastic behaviour of alkali halides is analyzed by assuming that change in polarizability is not responsible for electronic polarizability. In this paper, we analyze theory and models related to this and discuss aspects related to photoelastic phenomenon. We analyze relation of photoelastic effects to ionic radius, volume dependence of effective charge etc. Methodology used is based on theoretical discussion of various theories and models related to photo elastic behaviour and its various related constants.

Key Words:- Polarizabilities, light scattering, dielectric constant, ionic radius.

Introduction

Photo elasticity of crystals is related to variation of refractive index or variation of electronic dielectric constant under hydrostatic pressure. Photo elastic effect in crystals is of great interest not only because of fundamental association with electronic polarizabilities, but also from the point of view of light scattering in crystals. It is also connected with problems of optical damage of solids by high LASER and self focusing of LASER beams. The dependence of energy gap on lattice parameter and volume has been evaluated to study the photo elastic behaviour. Even the empirical approaches suggested in the past have been indirect and can be extended in a straight forward manner to include other families of crystals. It is observed that photo elastic behaviour of alkali halides can be analyzed by assuming that change in cation polarizability does not contribute to electronic strain polarizability. The main contribution arises from strain derivatives of anion polarization. The strain derivatives of dielectric constants are related to photo elastic behaviour of solids. In this paper, we will study the relation between photo elastic effect to ionic radius. The methodology used is based on theoretical discussion of various existing theories related to photo elastic behaviour.

Polarizability and Photo elasticity

Studies on volume dependence of refractive index and polarizability provide useful information for understanding the photoelastic behaviour, frequency dependence of photoelastic constants and optical performance of high power LASER beams. From the view point of theoretical knowledge, the calculation of strain polarizability parameter and

* Assistant Professor of Physics, Vaish College, Bhiwani, Haryana, India

then the comparison with experimental data makes a critical test of existing theories of electronic polarizabilities. For alkali halides the situation has been complicated by development of new concepts of polarizabilities. Values of electronic polarizabilities changed significantly when the ions are transported into crystalline state from free state. For explaining these changes in polarizabilities several models with different physical origins have been developed. The first and oldest one is due to Fajan and Joos according to which the electronic polarizabilities of cations increase and those of anions decrease in going from free state to a crystalline state because of electronic potential which is negative at the cation site and positive at anion site. This causes the loosening of cations and tightening of anions due to the effect of crystal potential. Pentiades and Wemple have considered a different model, which considers that transitions from the anions to conduction band make the dominant contribution to crystal polarizability. The corresponding transitions from cation are considerably higher in energy such that they are considered to contribute significantly to crystal polarizability. However, this picture suggesting the cation polarizabilities to be almost zero is not consistent with traditional work and also contrary to the evidence based on analysis of reflectance spectra for ionic crystals. Coker has developed another model for electronic polarizabilities by making a careful analysis of experimental data on electron density measurements, reflectance spectra and reflection data. According to Coker's model the electronic polarizabilities of cation remain unchanged in crystals relative to Free State whereas the anion polarizabilities in crystals are reduced significantly. Such changes in polarizabilities are due to neighbouring ions in terms of model developed by Wilson and Curtis and extended by Cover. This model offers a simple approach for studying photoelasticity of ionic crystals such as alkali halides. However, it was not possible to obtain a quantitative good agreement between theory and experiment. This calculated values of electronic strain polarizability parameter for alkali halide crystals turned out to be significantly different from the corresponding experimental values.

In the present analysis, we use the modified form of additive rule as proposed by Raghurama and Narayan for crystalline state electronic polarizability parameter and volume derivative of refractive index are determined assuming that anion polarizability changes significantly in going from Free State to crystalline state while cation polarizability remains unchanged. The use has been made to five different models due to

- i) Yamashita and Kurosawa (YK)
- ii) Dick and Overhauser
- iii) Hanlon and Lawsor
- iv) Aggarwal and Szigeti
- v) Wilson, Curtis and Coker along with three different sets of Free State polarizabilities. The refractive index of crystal depends on the volume on density and polarizability through the Lorentz-Lorentz relation,

$$\frac{n^2 - 1}{n^2 + 2} = \frac{4 \pi \alpha}{3V}$$

Where α and V are the electronic polarizability and volume per ion pair respectively. The pressure or volume dependence of n is related to photoelastic behaviour of crystals, Burstein and Smith found that the experimental values of Volume or density dependence of refractive index can be explained only if one takes into account the variation of polarizability with change in volume. The volume derivatives of refractive index calculated

by assuming that the polarizability does not change with volume were found to deviate significantly from the corresponding experimental values. By making a comparison of calculated and experimental values of dielectric constant it has been that polarizabilities obtained by Raghurama and Narayan produce the best agreement with experimental data. Raghurama and Naryan used the modified form of additivity rule as given below,

$$a = a_+ + (r/l)^n a_-$$

Where $(r/l)^n = k$ and a_+ and a_- are the electronic polarizabilities of cation and anion respectively, n is a arbitrary constant which is 0.26 for alkali halides and l is normalization length equal to 3 \AA . The electronic polarizabilities of ions changes when they are transported into crystal from Free State. Numerous models have been developed to explain these changes in polarizabilities. Similar changes in polarizabilities are expected when the volume or density of crystal changes. Thus we can extend the use of various models of electronic polarizabilities for calculating the strain polarizabilities and volume derivatives of refractive index.

Conclusion:

The photoelasticbehaviour, i.e., volume derivatives of electronic dielectric constant can also be studied by using theoretical method. We make use of equation to calculate R/C (dc/dR) to calculate photoelastic constants. It has been suggested that for highly ionic crystals such as alkali halides, value is zero. The first order strain derivatives can be evaluated for alkali halides are in good agreement with experiment. This serves to support the approach used. Duye to lack of experimental data, the second order derivatives is calculated from quadratic electro-optic coefficients can be related to theoretical results. The correlation between photoelastic effect and ionic raddi has been discussed in terms of different theoretical models. In calculation of bond orbital method has been extended by presence of term involving the relative cation to anion size difference. This term is not inconsequential is an evolution of refractive index itself and become more important as ionicity of crystal increases.

References

1. M.Mullar; Phys.Rev.47, 947 (1935).
2. J.Shanker and S.Dixit;Phys. Stat. Sol(a) 123, 17(1991).
3. M.Kumar and U.C. Dixit. Ind. J.App.Phys.,31,234 (1993).
4. G.Raghurama and R.N.Narayan; current. Sci.52,210 (1983).
5. J.Shankar, G.G. Aggarwal and N.Dutta; Solid Stat. Commun, 25, 993(1985).
6. H.Z. Weber; Z Kristallogr, 177, 185 (1986).
7. E.Burstein and P.L. Smith; Phys. Rev. 74,229 (1948).
8. G.Rachurama and N.Narayan; Curr.Sci., 52, 210 (1983).
9. Reddy R.R. and Anjaneyula S; Phys. Stat. Sol. (b) 174, K99 (1992).
10. Reddy R.R. and Ravishanker M; Crystal res. Tech. 281, 973 (1993).
11. D.R. Penn, Phys. Rev. 128, 2093 (1962).
12. H.Muller, Phys. Rev., 947 (1935).
13. Van- Vechten J.A., Phys. Rev. 891, 469 (1969).
14. S.K. Sipani and V.P. Gupta, J.Phys. Chem. Solids 52, 457 (1991).

Marketing Strategies of Verka- A Dairy Industry

Divya Bishnoi*

Dr. S.N. Vyas**

Abstract

Dairy is a large scale agronomics production. Dairy milk animal abide approximately in every country all over the world and on dairy farms up to one billion people lives. It is an essential element of rural economy and also plays a vital part in universal system of food. It is a broadly accredited fact that the segment of dairy industry directly give to the economics of a number of organization, block, society and countries. An organization's notion combines all its marketing goals into one inclusive plan. The core aim of marketing strategy referred as innovational techniques adopted by dairying management to maximize the profits and benefits. In this paper we will scrutinize about the dairy marketing strategies implemented in 'VERKA – MILKFED.'

Keywords: Marketing strategy, VERKA-MILKFED, marketing mix, sales, innovational techniques, SWOC analysis.

Introduction

In different districts of Punjab, Cooperatives played a fundamental role to encourage the economy of milk producer households. Milk is processed by 6160 primary milk cooperative under 11 district milk cooperatives. The Dairy Board's activities and programs seek out to make up the working of dairy cooperative as originator-owned and controlled federation.

The first decade of 21st century challenged firms to thrive financially and even survive in the phase of an unforgiving economic environment. Addressing for those challenges marketing is playing a major role. Finance, operation accounting and other business functions won't actually matter without adequate demand for products and services so the firm can earn a profit. Thus financial success often depends on the marketing skills. The marketing plan is the structure of a marketing strategy. Marketing mix and SWOC analysis are key strategies used in marketing. Marketing mix consists of 7P's- product, place, price, promotion, process, people and physical evidence and also a new P i.e. productivity and quality. SWOC analysis consists of strengths, weaknesses, opportunities and challenges; strengths focus on advantages of the industry, weakness signifies on the deficiency of the industry, opportunities focuses on the prestige of the industry and challenges of industry means risk, presage and future problems.

Literature review

Kamat G.S. (2008) He has emphasized on the market oriented dairy development. In his view it can only make certain success of dairy units whether they are public, private or cooperative sectors. There is an immense necessitate to institutionalize milk trade from the phase of production to marketing.

K. Rajendran and Samarendra Mohanty (2004) they evaluate the existing condition of milk marketing and dairy cooperatives in India and provide suggestion to meet upcoming

* Research scholar, Tantia University, Sri Ganganagar

** Supervisor

challenges. The outcome of the study point out that 80% of the milk produced by the rural producer is handled by an unorganized sector and the remaining 20% is handled by an organized sector. It is found that the dairy cooperative play a very important role in removing rural poverty by augmenting rural milk productions and marketing. Involvement of mediators, lack of bargaining power by the producers and lack of infrastructure conveniences for collection, storage, transportations and processing are the key constraints which affects the prices revised by producers in milk marketing. Milk quality, products development, infrastructure support development and international marketing are found to be upcoming challenges of Indian milk marketing.

Need of the study

The Verka dairy had adopted marketing strategies to enhance growth of the industry. So, this study has made an effort to provide an analysis of verka dairy.

Objective

The objective of study is to analyze the marketing and commerce strategies of verka dairy.

Methodology

This study is based on secondary data. The secondary data have been collected from reports, journals and various publications of marketing strategies of the dairy industry, published report of MILKFED, Punjab Dairy Development Board, Animal husbandry department, Economic and statistical organization (ESO), Punjab etc.

Marketing strategies of VERKA

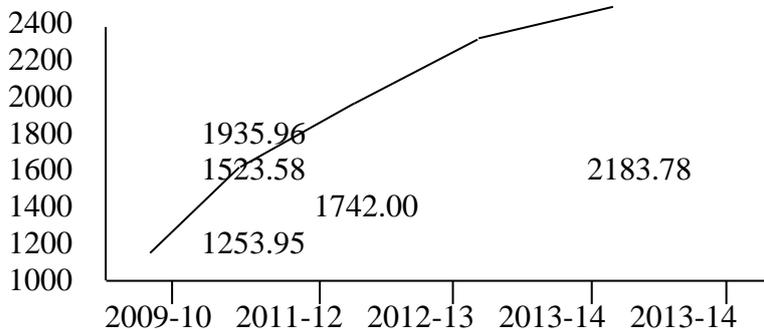
Verka is flagship brand of MILKFED and came into existence in year 1973 when MILKFED was mandated for milk procurement, quality processing of milk and its products and marketing of these products. Verka as a trusted brand has become a household name and lined by its customers for nutrition quality and sheer indulgence. It has consolidated its brand strength by not only retaining the high quality of existing products but also by innovating and bringing new products to the tables of its diverse customers. Verka has a wide range of products including different variants of Pasteurized packed milk, Ghee, table butter, skimmed milk powder, whole milk powder, cheese, sweetened flavored milk, Ice cream, Indigenous sweets, fresh products like Lassi, Paneer, Dahi, Kheer and Tetra pack products such as fruit beverages and milk. The products are available in Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir and Northeast India. Verka also export Ghee to countries like the Middle East, Australia, Japan, New Zealand and Malaysia.

Vision and Mission of VERKA

The vision of VERKA is to become the most admired brand in the dairy sector and vibrant cooperative institution in the country, facilitating inclusive growth.

The mission of verka is to ensure prosperity to the milk producers by ensuring milk procurement at remunerative prices around the year coupled with providing quality extension service for enhancing milk production as were as seducing costs ensuring quality processing of milk and production of milk products in a clean, hygiene manner and making them available to the consumers at reasonable prices through excellence in marketing.

Year	Sales Turnover (in Crores)
2009-10	1253.95
2010-11	1523.58
2011-12	1742.00
2012-13	1935.96
2013-14	2183.28



Verka dairy industry is growing progressively from 2009-10 to 2013-14 as shown in the table this growth not only helps in milk sales, but also helpful in increasing employment opportunities, income and rural development.

SWOC analysis of VERKA

SWOC analysis is a strategic planning technique used to research external and internal factors which affect company success and growth. Firms use SWOC analysis to determine the strengths, weakness, opportunities and challenging of their firm, products and competition. A dairy industry unit must keep an eye on key implication of internal and external factors that affects its potential to gain profits.

Strength of Verka

- (i) Abundance of raw material i.e. MILK.
- (ii) High demand of milk and milk products in India as well as in neighboring countries.
- (iii) Government support by providing effective health cover in form of veterinary hospitals and breeding centers.
- (iv) Trained employees and milk producers. Training providing by both MILK FED and by government through various schemes.

Weakness obstructing VERKA

- (i) Difficulties faced in procurement of Milk due to bad roads in village and lack of transportation facilities.
- (ii) Perishable nature of milk.
- (iii) Lack of control over milk yield.
- (iv) Competition faces from private dairies and local milk vendors.
- (v) Lack of frequent advertisements.
- (vi) Unavailability of Verka booths in rural areas.

Opportunities of VERKA

- (i) Wide range and line of products provided by verka. Many more new products can be added and value addition can be done through attractive and convenient packaging.
- (ii) The brand “VERKA” enjoys brand equity in market. Consumers are aware about Verka brand and its product in market.
- (iii) Verka is already selling its product in states other than Punjab and also exporting to foreign market. Yet, it has a high export potential, with its wide products range it can tap the market of other states and globally also.

- (iv) With frequent advertisements in newspapers and TV it can increase its sales and also by opening Verka booths in rural areas.

Challenges Faced by VERKA

- (i) The local milk vendor is the biggest challenge in front of Verka. As local milk vendors collect milk from door to door in villages on motorcycles and distribute this fresh milk in town and cities. They give high prices to milk producers.
- (ii) Competition from other brand like Amul Mother Dairy, Vadilal etc.

Conclusion

Marketing is a strategy, a regulative function and a set of procedure for constructing, communicating and delivering value to consumers and for operating consumer's relationship in way that betterment the organization. Marketing strategy is the art and science of choosing desire markets and gaining protection and developing consumers through conceive, distributing and conveying admirable consumer value. The set population is sharing out verka and in broad, we will found out all different age group people like children, adult and senior citizen and population vital statistics enjoying verka products. As long as verka is not present at this moment as only milk but also in butter, cheese, chacha, Lassi, ice cream and many other different products. verka has very special broad products folder. It does not only differentiate in its consumers but apply a core marketing principle and till date, these principles are working very hard for the marketing strategy of Verka.

References

- Annual report of Verka MILKFED.
- www.verka.coop
- Kothari C.R. – research methodology.
- Kotler Philip – Marketing management.
- Kamat G.S. (2008), "Dimension of dairy marketing," Kurukshetra, Vol. 26, No. 5, December, New Delhi.
- Rajendran. K. and Samarendu Mohanty (2004), Dairy cooperative and milk marketing in India constraints and opportunities" Journal of food distribution research, Vol. 35, Issue 02, P 24.

Impact of Microfinance on Multi-Dimensional Poverty

NABEEL AHMAD*

Abstract

Numerous attempts have been made worldwide to analyse whether microfinance provides the substantive grounds to reduce poverty or not. Many researchers attempt to justify the improvements in life of the poor through various channels of microfinance while many other believe microfinance as a failure in curtailing down poverty. In the same context, present study analyses the impact of microfinance on poverty in the most populous state of India also the home to the largest number of poor.

The study provides empirical evidence about whether microfinance significantly affects poverty or not, specifically in the state of Uttar Pradesh. The study takes the latest definition of poverty into consideration, calling it a multi-dimensional approach through a combined index for health, education and living standards as given by Oxford Poverty & Human Development Initiative (OPHI), University of Oxford.

Keywords: *Poverty, microfinance, poor, poverty-alleviation, rural development, Uttar Pradesh*

Introduction

Microfinance, from the developing country perspective, is being recognised as the best tool to reduce poverty. The extensively held assumption is providing monetary assistance or financial support to the needy and poor households to empower them to become micro-entrepreneurs, to accumulate savings, to improve the level of income, to increase health and safety, to manage the risk of uncertainty, and ultimately to jump out of poverty. From the last four decades, microfinance is the subject of interest among researchers, academicians, NGOs, social organisations around the globe. Numerous attempts have been made in order to analyse whether microfinance provides the substantive grounds to reduce poverty or not. Several researchers attempt to justify the improvements in the life of the poor through microfinance institutions. But the question of substantial change or improvement is still the valid argument to refute. Authors like Reed (2013) clearly mentioned in his research that microfinance is just a myth of people and it doesn't have any significant relationship with poverty reduction or income increment.

Justification of the study

As we all know that Poverty is one of the biggest concerns the world is facing today especially in the countries like India, Nigeria (Kaka and Abidin, 2014; Owolabi, 2015; Taiwo, 2012), Pakistan (Noreen et al., 2011), and other developing countries (Fernando, 2004). Also, along with poverty, there are other issues related, which are also of major concern such as the standard of living and health (Srinivisan, 2010). So, in order to study the impact on overall poverty, the study has divided poverty in to 3 more sub-dimensions viz. Health, Standard of Living and Education. Here, the study takes the latest definition of poverty, given by Oxford Poverty & Human Development Initiative (OPHI), University of Oxford, calling it a multi-dimensional poverty, which says that poverty is a combined index for health, standard of living and education.

* Research Scholar, Department of Commerce, Aligarh Muslim University, Aligarh

So, this study provides an insight on the contribution of microfinance to alleviate poverty, improving standard of living, increasing healthcare and uplifting education for the people living in both urban and rural areas of Uttar Pradesh.

Research Gap

i. In India, most of the studies have been carried out in four southern states namely Andhra Pradesh, Karnataka, Tamil Nadu and Kerala and there is a dearth of impact studies related to microfinance in Uttar Pradesh.

ii. There is hardly any comprehensive study which analyzes the impact of microfinance on poverty alleviation along with the dimensions of health, education and standard of living in Uttar Pradesh.

Therefore, the present study differs from earlier studies as it covers important variables like poverty eradication, health, standard of living and education to examine the impact of microfinance on poverty in Uttar Pradesh.

Objective of the study

The main objectives of the study is to find the answer to the major question involved in the research "*Does microfinance have any impact on poverty alleviation, the standard of living, health and education in Uttar Pradesh*". In accordance with the said question, following objectives have been framed:

1. To find out the role of microfinance in poverty alleviation in the selected regions of Uttar Pradesh.
2. To explore the microfinance role in supporting Health in Uttar Pradesh.
3. To check the impact of microfinance on increasing standard of living in Uttar Pradesh.
4. To find out the role of microfinance in education in Uttar Pradesh.

Literature and Hypothesis Development

The study utilizes around 60 research papers from the leading journals. There is extensive literature in microfinance field. But due to its main focus on poverty alleviation, the researcher is able to find the well-documented research works from the pool of previously done research works. From the microfinance literature on poverty alleviation, and in accordance with the above objectives, the study formulated following hypotheses to testify:

H₀₁: Microfinance has no significant impact on poverty alleviation in Uttar Pradesh.

H₀₂: Microfinance has no significant impact on health in Uttar Pradesh.

H₀₃: Microfinance has no significant impact on standard of living in Uttar Pradesh.

H₀₄: Microfinance has no significant impact on education in Uttar Pradesh.

Data Collection and Sample

The study employs both primary and secondary sources of data. Secondary data have been collected from relevant subject books, published articles and research papers, working papers proclamation and government reports in order to explain the role of microfinance institutions in poverty alleviation in Uttar Pradesh. To increase the reliability and creditability of data, primary sources have been collected through participant observation and structured questionnaires.

In order to collect the primary data, 1300 structured questionnaires were distributed to the beneficiaries of microfinance in branches and sub-branches located in Uttar Pradesh. This study used four important microfinance institutions (MFIs) which are Yuva Chetna Kendra established in Deoria, Bharatiya Micro Credit and Sanchetna Financial Services Pvt. Ltd. established in Lucknow, and Gramotthan Micro Finance Company established in Padrauna (Kushinagar) along with many other prominent MFIs in Uttar Pradesh.

Data Analysis

Testing of hypothesis: Model I

RQ1: Is there any impact of microfinance on poverty alleviation in Uttar Pradesh?

Hypothesis for Research Question 1

RQ₀₁H₀₁: Microfinance has no significant impact on poverty alleviation in Uttar Pradesh.

RQ₀₁H_{a1}: Microfinance has a significant impact on poverty alleviation in Uttar Pradesh.

Linear regression is applied to measure the impact of microfinance on poverty alleviation in Uttar Pradesh. Here, the dependent variable is poverty alleviation and independent variable is microfinance. Null hypothesis states that there is no significant impact of microfinance on poverty alleviation in Uttar Pradesh.

Table 1 - Regression Analysis of Microfinance and Poverty Alleviation

Model-1	
Pearson Correlation (R)	0.770
R Square	0.592
Unstandardized Coefficient	0.989
t Value	42.667
P Value	0.000
ANOVA	
F Value	1820.511
P Value	0.000

Source: SPSS result

Table 1 shows the regression analysis of microfinance on poverty alleviation. Firstly, Pearson's correlation is 0.770 which shows a positively strong relationship between the two variables. Secondly, R square indicates the change in one variable due to the change occurred in the other variable. Here, the value of R square is 0.592 which shows that 59.2 percent variation in poverty alleviation is explained by the microfinance variable. Thirdly, ANOVA indicates the significance of the model, according to which, the model comes out to be statistically significant at 0.000 which is less than 0.05 at 95 percent level of confidence. Fourthly, unstandardized beta coefficient comes out to be 0.989 which indicates that one unit change in microfinance will lead to 0.989 unit of change in poverty alleviation. Finally, the impact of microfinance on poverty is found to be strong and positively significant with p value as 0.000 which is less than 0.05 at 95 percent level of confidence.

Therefore, it is found that microfinance has a significant impact on poverty alleviation in Uttar Pradesh; hence, the Null hypothesis is rejected.

Testing of hypothesis: Model II

RQ2: Is there any impact of microfinance on health in Uttar Pradesh?

Hypothesis for Research Question 2

RQ₀₂H₀₁: Microfinance has no significant impact on health in Uttar Pradesh.

RQ₀₂H_{a1}: Microfinance has a significant impact on health in Uttar Pradesh.

Linear regression is applied to measure the impact of microfinance on health in Uttar Pradesh. Here, the dependent variable is health and independent variable is microfinance. Null hypothesis states that there is no significant impact of microfinance on health in Uttar Pradesh.

Table 2 - Regression Analysis of Microfinance and health

Model-2	
Pearson Correlation (R)	0.519
R Square	0.269
Unstandardized Coefficient	0.660
t Value	21.484
P Value	0.000
ANOVA	
F Value	461.568
P Value	0.000

Source: SPSS result

Table 2 shows the regression analysis of microfinance on poverty alleviation. Firstly, Pearson's correlation is 0.519 which shows a moderately strong relationship between the two variables. Secondly, R square indicates the change in one variable due to the change occurred in the other variable. Here, the value of R square is 0.269 which shows that 26.9 percent variation in poverty alleviation is explained by the microfinance variable. Thirdly, ANOVA indicates the significance of the model, according to which, the model comes out to be statistically significant at 0.000 which is less than 0.05 at 95 percent level of confidence. Fourthly, unstandardized beta coefficient comes out to be 0.660 which indicates that one unit change in microfinance will lead to 0.660 unit of change in poverty alleviation. Finally, the impact of microfinance on poverty is found to be strong and positively significant with p value as 0.000 which is less than 0.05 at 95 percent level of confidence.

Therefore, it is found that microfinance has a significant impact on health in Uttar Pradesh; hence, the Null hypothesis is rejected.

Testing of hypothesis: Model III

RQ3: Is there any impact of microfinance on standard of living in Uttar Pradesh?

Hypothesis for Research Question 3

RQ₀₃H₀₁: Microfinance has no significant impact on standard of living in Uttar Pradesh.

RQ₀₃H_{a1}: Microfinance has a significant impact on standard of living in Uttar Pradesh.

Linear regression is applied to measure the impact of microfinance on standard of living in Uttar Pradesh. Here, the dependent variable is standard of living and independent variable is microfinance. Null hypothesis states that there is no significant impact of microfinance on standard of living in Uttar Pradesh.

Table 3 - Regression Analysis of Microfinance and standard of living

Model-3	
Pearson Correlation (R)	0.597
R Square	0.356
Unstandardized Coefficient	0.709
t Value	11.075
P Value	0.000
ANOVA	
F Value	693.952
P Value	0.000

Source: SPSS result

Table 3 shows the regression analysis of microfinance on standard of living. Firstly, Pearson's correlation is 0.597 which shows a moderately strong relationship between the two variables. Secondly, R square indicates the change in one variable due to the change occurred in the other variable. Here, the value of R square is 0.356 which shows that 35.6 percent variation in poverty alleviation is explained by the microfinance variable. Thirdly, ANOVA indicates the significance of the model, according to which, the model comes out to be statistically significant at 0.000 which is less than 0.05 at 95 percent level of confidence. Fourthly, unstandardized beta coefficient comes out to be 0.709 which indicates that one unit change in microfinance will lead to 0.709 unit of change in poverty alleviation. Finally, the impact of microfinance on standard of living is found to be strong and positively significant with p value as 0.000 which is less than 0.05 at 95 percent level of confidence.

Therefore, it is found that microfinance has a significant impact on standard of living in Uttar Pradesh; hence, the Null hypothesis is rejected.

Testing of hypothesis: Model IV

RQ4: Is there any impact of microfinance on education in Uttar Pradesh?

Hypothesis for Research Question 4

RQ04H01: Microfinance has no significant impact on education in Uttar Pradesh.

RQ04H01: Microfinance has a significant impact on education in Uttar Pradesh.

Linear regression is applied to measure the impact of microfinance on education in Uttar Pradesh. Here, the dependent variable is education and independent variable is microfinance. Null hypothesis states that there is no significant impact of microfinance on education in Uttar Pradesh.

Table 4 - Regression Analysis of Microfinance and Education

Model-1	
Pearson Correlation (R)	0.340
R Square	0.116
Unstandardized Coefficient	0.427
t Value	12.809
P Value	0.000
ANOVA	
F Value	164.083
P Value	0.000

Source: SPSS result

Table 4 shows the regression analysis of microfinance on education. Firstly, Pearson's correlation is 0.340 which shows a moderately strong relationship between the two variables. Secondly, R square indicates the change in one variable due to the change occurred in the other variable. Here, the value of R square is 0.116 which shows that 11.6 percent variation in education is explained by the microfinance variable. Thirdly, ANOVA indicates the significance of the model, according to which, the model comes out to be statistically significant at 0.000 which is less than 0.05 at 95 percent level of confidence. Fourthly, unstandardized beta coefficient comes out to be 0.427 which indicates that one unit change in microfinance will lead to 0.427 unit of change in education. Finally, the impact of microfinance on education is found to be strong and positively significant with p value as 0.000 which is less than 0.05 at 95 percent level of confidence.

Therefore, it is found that microfinance has a significant impact on education in Uttar Pradesh; hence, the Null hypothesis is rejected.

Summary and Discussion

In nutshell, we attempt to check the impact of microfinance on poverty alleviation, health, standard of living and education. By performing the linear regression, we reject the null hypothesis one by one that there is no correlation between the microfinance and poverty alleviation, health, standard of living and education.

The overall results can be seen from the Tables below:

Table 5 - Summary of hypotheses testing

No.	Hypotheses	P- value	Findings/Results
Objective 1	To find out the role of microfinance in poverty alleviation in Uttar Pradesh.		
RQ₀₁H₀₁	Microfinance has no significant impact on poverty alleviation in Uttar Pradesh.	0.00	Rejected
Objective 2	To explore the microfinance role in supporting Health in Uttar Pradesh		
RQ₀₂H₀₁	Microfinance has no significant impact on health in Uttar Pradesh.	0.00	Rejected
Objective 3	To check the role of microfinance in increasing the standard of living in Uttar Pradesh.		
RQ₀₃H₀₁	Microfinance has no significant impact on standard of living in Uttar Pradesh.	0.00	Rejected
Objective 4	To check the role of microfinance in supporting education in Uttar Pradesh.		
RQ₀₄H₀₁	Microfinance has no significant impact on education in Uttar Pradesh.	0.00	Rejected

Source: SPSS result

From the results, it is clear that microfinance is a significant tool to alleviate poverty and provides a stable base in reducing poverty in Uttar Pradesh. Microfinance also improves the standard of living of people, have a positive impact on Health and have a good role in uplifting education in Uttar Pradesh. Through this analysis, it becomes clear that microfinance has impacted each and every aspect of poverty.

Concluding Remarks

In India, generally, microfinance is sought by Small and marginal farmers; Rural artisans; and economically weaker sections. Women constitute a vast majority of users of micro credit and micro savings facilitates. The economist and practitioners in India felt that there is a need for 100% financial inclusion through micro financing. However, contrary to this,

huge population of India consists of un-bankable individuals. The poor individuals are trapped in poverty, commercial banks do not lend them money as they are often neither in a position to offer collaterals nor are they considered “creditworthy” enough; while Local money-lenders, who are often their only source of credit, charge exorbitantly high-interest rates, thereby depleting them of whatever little possible savings they can manage. The numbers indicate that microfinance institutions did indeed give the poor a way to generate income. These small loans helped poor to start and run small businesses, where they were able to make money. Hence, there is a need for microcredit institutions offer a few loans to the people in the bottom of the pyramid. The increase in accessible loan facility on low charges will increase the micro financing trend in India. Finally, it can be said that microfinance is a great system to generate income among low-income clients and to promote self-worth and empowerment among individuals in developing nations.

Suggestion and Recommendation

- Microfinance main objective is to break down the vicious circle of poverty by providing small to medium volume of financial assistances to the poor at zero to very nominal interest rates. But, in the present scenario, MFI, levying high interest rates, snatches the very core feature of microfinance which is its financial affordability. However, poor may get the timely financial help but instead of being dragged out of poverty they will be sucked more deep in to its trap by increasing their regular financial liabilities to new levels.
- Some MFIs levy high to exorbitant interest rates in the name of operating costs. The functioning of the MFIs should come under radar of the investigating agencies and transparency should be maintained with the government to avoid financial harassment of the poor.
- The Microfinance is a channel to provide financial assistance to the poor but present study reveals that most of the microfinance subscribers were above the poverty line. Therefore, there is a need for a clear cut guideline to either include or exclude the people who are at par the poverty line. Necessary steps must be taken to reach the poor and that is why only people who are below the poverty line should be given Microfinance assistance or at least given the preference over the people who are considered above the poverty line.
- MFIs, in their present system allow a variety of financial products including the insurance services for poor at nominal costs. These insurance services provide a safety net for them to absorb financial shocks related to unavoidable business and personal losses. These insurance services and schemes should be specifically tailored according to the clients' needs.
- India being an economy mostly based on agriculture is very much prone to weather shocks. Especially, in Uttar Pradesh, where most of the farmers, who come below the poverty line, face many difficulties to maintain their crops alive. Sometimes, there are droughts and some time there is excessive rain. These situation calls for a serious assistance of farmer based micro-insurance services which are tailored specifically to support farmers through seasonal fluctuations in the weather conditions over time.
- There is also a serious need of cheap micro health insurance services as it is clear from this study that poor do not have much savings and in order to face family health shocks, unfortunately they have to use micro-loans in its treatment, which originally is meant for investment purposes. Therefore, cheap health and life insurance services

should be provided to cover the poor's risk regarding health issues instead of making them use micro loans for the same purpose.

- MFIs should conduct seminars, workshops and programs to raise the awareness of financial literacy and microfinance services. This will help the poor to be educated about basic financial knowledge and will be an asset for the MFIs as a medium of advertisement for their firms.
- MFIs should incorporate financial counseling and advisories related to micro and small businesses through well trained financial experts. This will surely raise the awareness about microfinance sector and people will not feel hesitant to come over to avail micro-finance services.

References

1. Fahad, Piyush Tiwari and S.M. (2008). Microfinance Institutions in India. Retrieved from <https://www.gdrc.org/icm/conceptpaper-india.html>
2. Kumar, Manish, Bohra, Narendra Singh, & Johari, Amar. (2010). Micro-finance as an antipoverty vaccine for rural India. *International Review of Business and Finance*, 2(1), 29-35.
3. Sharma, Manohar. (2000). Impact of microfinance on poverty alleviation: International Food Policy Research Institute (IFPRI).
4. Reed, L. R. (2013) Vulnerability: The state of the microcredit summit campaign report 2013. www.microcreditsummit.org
5. Kaka, E. J., & Abidin, F. Z. (2014). Poverty alleviation in the Northeast Nigeria mediation of performance and moderating effect of microfinance training: A proposed framework. *Mediterranean Journal of Social Sciences*, 5(27), 62–68. <https://doi.org/10.5901/mjss.2014.v5n27p62>
6. Owolabi, O. E. (2015). Microfinance and poverty reduction in Nigeria : a case study of lapo microfinance, (june).
7. Srinivisan, R. (2010). *Health care in india - vision 2020*.
8. Taiwo, J. N. (2012). The impact of microfinance on welfare and poverty alleviation in southwest Nigeria by Department of Banking and Finance School of Business College , Development Studies, Covenant University , Ota
9. Noreen, U., Imran, R., Zaheer, A., & Saif, M. I. (2011). Impact of Microfinance on Poverty : A Case of Pakistan. *World Applied Sciences Journal*, 12(December 2005), 877–883.
10. <https://ophi.org.uk/research/multidimensional-poverty/>

Rural Employment Programmes in Bihar with Special Reference to Jawahar Rojgar Yojna

Vinay Kumar Singh (Asst. Prof.)*

Introduction

By merging the two erstwhile wage employment programme – National Rural Employment programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) the Jawahar Rozgar Yojana (JRY) was started with effect from April, 1, 1989 on 80:20 cost sharing basis between the centre and the States. The main objective of the yojana was additional gainful employment for the unemployed and under-employed persons in rural areas. The other objective was the creation of sustained employment by strengthening rural economic infrastructure and assets in favour of rural poor for their direct and continuing benefits. Though the people below the poverty line were the target group for employment, the preference was to be given to the Scheduled Castes, Scheduled Tribes and freed bonded labourers. Thirty percent of the employment opportunities were to be reserved for women in rural areas. Gram Panchayats were to be involved in the planning and implementation of the programme. At the instance of the Planning Commission, the Programme Evaluation Organisation (PEO) undertook a quick study of the JRY with a view to assess the extent to which the Yojana helped in providing employment to the target group; analyse the type of assets created under the yojana including their quality and usefulness; comprehend the arrangements for the maintenance of assets created; and study the problems encountered in the implementation of the Yojana.

India is basically an agrarian economy, as more than two third of the rural population is directly dependent on agriculture. The distribution of the land, however, is skewed. Nearly 78 per cent of the cultivators are small and marginal (possessing less than 2hectors of land each) farmers. Of these 31.15 per cent have less than 0.2 ha of land and 11.25 per cent are almost landless (Agriculture census 1990-91). The main source of employment for most of these people is agriculture labour. Agriculture wages are also available only during agricultural activities, which is 90 to 120 days in a year. During the lean season, most of these people are either underemployed or even unemployed. Our growing population is adding to the labour force at quite a high rate, and to create jobs for an ever increasing working population is a very difficult task. The rural unemployed can be divided into four categories: (i) literate skilled, (ii) literate unskilled, (iii) Illiterate skilled and (iv) illiterate unskilled. Majority of the rural unemployed belong to the fourth category and these people survive with only their physical labour. Poverty is therefore more concentrated among the people of this category. Keeping these factors in view and to provide employment to these people, the Government of India, for the first time, introduced a Crash Rural Employment Programme (CREP) in 1969 on a pilot basis in some selected districts and later expanded it to a few more districts, where the agriculture labour population was comparatively high. Again in 1973-74, a Pilot Rural Employment Programme (PIREP) was launched in areas presumed to be critically affected by the problem of unemployment. Though the problem of underemployment among small and marginal farmers and artisans has existed all along;

*P.G. Department of Commerce, RDS College, Muzaffarpur Bihar

it is most acute among the agriculture labour which is growing in size day by day. It is for this reason that the wage employment programmes have become an essential part of the poverty alleviation programmes.

Background of the Wage Employment Programmes

It has already been discussed earlier that during the Fourth Five-year Plan wage employment programmes were introduced on a trial basis to help agriculture labour to get employment during the lean season. The two programmes under implementation during the Fourth and the Fifth Five-year Plans were CREP and PIREP covering nearly 2000 blocks, which were identified as having concentrations of agricultural Labourers with acute problems of unemployment and under employment. In the year 1978-79, these two programmes were merged and a new programme called Food For Work (FFW) was launched. During that period, the food stocks of the country were plentiful and it was thought that by providing food-grains as part of the wages, it would not only provide food at a cheaper rate to the wage earners, but also solve the problem of financial resources needed for the wage employment and at the same time make the best use of the available food stocks in the country. In the year 1980, FFW was redesigned and renamed the National Rural Employment Programme (NREP) and extended to all the districts and blocks in the country. The NREP has twin objectives.

- i) To generate wage employment for the needy rural labour who cannot be covered under self-employment programmes; and
- ii) To create rural infrastructure and durable community assets which would in the long run help in economic development of the rural areas. With the expansion of the coverage of the NREP, the resources for generating wage employment at the village level were found to be inadequate and therefore it was not possible to provide adequate wage employment to the wage seekers in the rural area. It was observed that NREP was not able to cover even 50 per cent of the villages in the country. In order to supplement the coverage of NREP and also to ensure wage employment for a minimum of 100 days in a year for at least one person from each family of agriculture labourers, another programme called the Rural Labour Employment Guarantee Programme (RLEGP) was introduced during the year 1983. RLEGP was a centrally sponsored programme with 80 per cent share from the Central Government and 20 percent from the states. The evaluation of these programmes, however, revealed that even after 7-8 years of implementation, their coverage was just around 55 per cent. It was also pointed out that the objective of providing assured 100 days' employment to at least one person of an agriculture labour family could not be met. One of the main drawbacks of these two programmes was that there was practically no participation of the village people either in identifying projects or in the planning and implementation of the works under NREP and RIEGP. Another objective of these programmes was to provide wage employment to the labourers closer to their villages. This objective either could not be met as the projects were identified by the block or district authorities at locations which were far from the villages of the employment seekers. In order to realize the benefits of the wage employment programmes it was felt necessary to involve village people, especially through the village panchayats, and to cover all the villages, NREP and RLEGP were merged and a new programme Jawahar Rozgar Yojana (JRY) was launched in 1989.

Objectives of JRY

Jawahar Rojgar Yojana was started with a view to expand the coverage of wage employment opportunities to all villages and to achieve the objective of providing employment to all wage seekers in close proximity to their villages. Accordingly, the responsibility to implement the programme was given to the Gram Panchayats. The primary objective of JRY was to generate additional gainful employment for the unemployed and the underemployed in rural areas. The secondary objectives of JRY were: (a) to create productive community assets for direct and continuing benefits to the poor and strengthening rural economic and social infrastructure which would lead to rapid growth of rural economy and as a result improve the income levels of the poor and (b) to bring about improvements in the overall quality of life in rural areas.

Salient Features of JRY

We know that JRY came into being after the merger of NREP and RLEGP, the two wage employment programmes, and its objective is also the same, but there are some differences in the process of its planning and implementation. The main features of the programme are as follows:

- Expenditure for the programme was shared by the Centre and states on 80:20 basis.
- DRDA/Zilla Parishad was made responsible for implementation at the district level and gram panchayats at the village level. The funds were directly released to the DRDA/ZP.
- Six per cent of the total JRY funds were earmarked for Indira Awas Yojana (IAY). Of the remaining, 20% were to be retained at the district level (DRDA/ZP) for inter-block/inter-district projects and 80% to be distributed to gram panchayats.
- The works were to be executed by the village people and employment of contractors was totally banned as in the case of NREP and RLEGP.
- Preference was given to SCs and STs.
- Employment opportunities for women were reserved up to 30 per cent.
- Food-grains as part of the wages could be provided at subsidized rates.
- Non-wage component or material component was not allowed to exceed 50% of the total project cost.
- Up to a maximum of 5% of the annual allocation was allowed to meet administrative expenditure and 1/5 of it could be spent on training of the officials/ non-officials involved in the implementation of JRY.
- Up to 10% of the total allocation of DRDA/ZP and gram panchayats was meant for maintenance of the assets created under earlier programmes (NREP/RLEGP) and JRY.

Types of Works Allowed under JRY

According to the JRY guidelines, such works are to be taken up as generate wage employment and also result in the creation of community assets and/or village infrastructure. Preference should be given to the following activities:

- i) Works that have potential for maximum direct and continuing benefits to the members of poverty groups;
- ii) Creation of such assets as are or can be owned by the beneficiary groups, either for direct use or for gains from the sale of the services/facilities created by the assets to ensure continuing incoming to the poverty groups.

iii) Higher priority is to be given to works which are required for infrastructure of poverty alleviation programmes like IRDP, DWACRA, TRYSEM, DDP and DPAP. In addition, construction of primary school buildings in the villages which have schools without buildings is also to be prioritized.

iv) Works benefiting individuals including (i) SCs/STs, (ii) bonded labourers and (iii) allottees of ceiling surplus land holders, wastelands and government lands; v) Social forestry on community lands as well as private lands of SCs and STs to generate income for the poor and also to develop ecological balance and environment of the village and surrounding areas. IAY was separated from JRY in 1995-96 and made a separate programme.

Components of JRY

There are three sub programmes of JRY, as the funds for these are provided from the allocation under JRY. Details about these programmes are provided below:

Indira Awas Yojana (IAY)

This programme was introduced as a component of RLEGP in 1984-85. After its merger with JRY, it became one of its components for which initially 6 % of the total allocation was earmarked. This allocation was enhanced to 10 % of the total allocation under JRY in 1992-93. IAY was initiated to provide housing facilities to the most poor among Scheduled Castes and Scheduled Tribes with hundred percent subsidies. From 1992-93 onwards, poorest of the poor from other categories were also allowed the benefits of IAY.

Million Wells Scheme (MWS)

This programme was introduced during 1988-89 and became a component of JRY in 1989. Under this scheme, open wells for irrigation were provided to the SC/ST beneficiaries free of cost. And 20 % of the total allocation was earmarked for the MWS. In 1992-93 this amount was enhanced to 30 % of the total JRY allocation. MWS was separated from JRY in 1995-96 and made a separate programme.

Operation Black Board: A provision for the construction of classrooms in school buildings was made under JRY in 1990-91 under the programme called Operation Black Board (OBB). Since the material component in the construction of classrooms was higher, the Department of Education provided 40 % of the cost for material and the remaining 60 % was met from the JRY with labour and material component being 40: 60.

Impact of JRY

Since the inception of JRY till March 1999, nearly Rs. 35,508 crores was spent and 73,640 lakh man-days of wage employment were created. Evaluation studies of the programme revealed that employment generated was too inadequate to bring about any meaningful increase in the earnings of the poor wage earners. The Concurrent Evaluation conducted by the Ministry of Rural Development during June 1993 – May 1994 shows that against the target of a minimum of 100 man-days of wage employment per family per year, only 11 man-days were created. This shows that one of the major objectives of the programme, i.e. to generate employment for the rural wage earners and for the unemployed/underemployed could not be achieved. There are many reasons for the poor performance of the programme in terms of employment generation. Some of these are: (i) the resources were too thinly spread to maximize coverage of the area and the beneficiaries, (ii) selection of the works was neither labour intensive nor did they have much relevance to the area or local needs, and (iii) the programme was perceived to be for building assets. It was also expected that

by interventions in the labour market through employment generating programmes, the market wages would show an upward trend, but this did not happen either.

Notwithstanding the deficiencies of the programme as cited above, two positive results were achieved by the programme. First, the programme did succeed in creating durable community assets like School Buildings, Panchayat Ghars, Community Halls, and other such infrastructure in the villages, though some of these assets were of poor quality and in certain cases inappropriate. Secondly, the programme was executed by the Gram Panchayats, a fact that has created a sense of empowerment among local governments, besides providing sound training to the panchayat leaders in planning and managing the development of the villages. Due to growing awareness among the people about such programmes, and pressure on elected representatives, the panchayat leaders are likely to implement the programme more efficiently than the government machinery. For the fear of being voted out, the panchayat leaders are expected to be more responsive to people's needs.

Current Status of JRY

The JRY which emerged from the merger of NREP and RLEGP in 1989 was renamed Jawahar Gram Samridhhi Yojana (JGSY) in 1999. Also, as the objectives and the operational strategies of JGSY and EAS were similar and overlapping, these two programmes were merged into one programme in 2001 with a new name - SampoornaGraminRozgar Yojana (SGRY). While the operational methodology of the programme continues to be the same as that of the earlier programmes, one of the important features of the programme is to give equal importance to the development of rural infrastructure.

References and Suggested Readings

Rural employment programme in Bihar with special reference to Jawahar RojgarYojna in Muzaffarpur District by Dr. Binay Kumar Singh.

Fourth and Fifth Plan Documents, Planning Commission, Government of India. *Annual Reports of the Ministry of Rural Development*, 1989-90 to 1999-2000, GOI. *Rural Statistics*, 1990 to 2001, NIRD, Hyderabad

Rajakutty, S., 2004, "Self and Wage Employment Programmes for Poverty Alleviation in India", *Journal of Rural Development*, Vol. 23, No. 2 (April – June, 2004).

India Nepal China relationship continuity and change

Krishna Singh (Ph.D)

Article

Nepal is an inland country. It's situated between two big economic nations China and India. The northern border of Nepal, that is generally mountainous, is connected with China whereas southern, Japan western border of Nepal is connected with India. The Constitution of Nepal (2015) has printed the directive principles, policies and obligations of the State relating to its policy. The policy of Asian country is guided by the enduring religion within the international organization and policy of non-alignment, mutual respect for every other's territorial integrity and sovereignty, noninterference in every other's internal affairs, respect for mutual equality, non-aggression and also the peaceful settlement of disputes, and cooperation for mutual profit as per the guiding principles of our policy (Shrestha, 2018). Though Nepal established a diplomatic relation with India and China severally in thirteenth June, 1947 and 1st August 1955, Nepal contains a relation with China and India since their existence. Nepal's foreign relations with China and India have evolved through totally different events, stages and periods in history. So, Nepal has multitude of relations with these 2 neighboring nations- starting from social, cultural, religious, geo-political, and economic to diplomatic relations. These relations have big through totally different ups and downs, and remodeled from straightforward, linear regard to complicated, weird relations. At present, Nepal has established diplomatic relations with one hundred fifty-five nations however Nepal's foreign relations with China and India square measure a lot of broader, wider, vital, and dynamic and have special characteristics. Once the declaration of recent constitution and institution of political theory in Asian country, Nepal's relation with China and India has to be redefined and revised within the modified perspective and is certain to evolve from new dimension. The geographical location, size, natural resources, population and different physical options and environmental options influence a rustic and confirm the political, military level of economic development and cultural characteristics of a nation (Bhattarai, 2005). So, at this state of affairs, it's worthy to debate historical development of Nepal's foreign relation with China and India; totally different bilateral treaties with these nations; dynamics of those relations in Nepal's geopolitics, socio-economy, and culture; and totally different problems associated with this. Objectives and Methodology The general objective of this paper is to explore the foreign relation of Asian country with China and Republic of India. This paper makes a short analysis of Nepal's policy with China and India, political and economic dynamics of those relations and new developments in Nepal- China and Nepal-India relation supported secondary knowledge. Review of Literature Constitutionally, policy is to be guided by the principles of the international organization Charter, non-alignment, Panchsheel (five principles of peaceful coexistence), jurisprudence and therefore the worth of world peace (Constitution of Nepal, 2015). In observe, Nepal's policy has not been directed towards projected influence internationally however towards protective autonomy and addressing domestic economic and security problems. Nepal's foreign relations in consonance with the policies and pointers of state of Nepal square measure created to safeguard Nepal's independence, sovereignty, territorial integrity, and enhance national

interest abroad; to market bilateral, regional and multilateral relations for the socio-economic development of the country, to market friendly relations with all the countries of the globe and notably with its immediate neighbors, on the premise of sovereign equality, mutual respect, trust, goodwill and understanding to play an energetic role within the international organisation and different international organizations, so as to market international peace, security and development to play a positive and significant role within the world . attributable to its geographical proximity to and historical links with China and India, Nepal's policy was targeted in the main on maintaining shut and friendly relations with these two countries and on safeguarding its national security and independence (Savada, 1991). The made second pro-democracy movement, the country has to examine its conduct of policy within the context of these changes and formulate and adopt its policy correspondingly (Bhattarai, 2013). With reference to all of its neighbors, Asian country has taken concrete steps over the past two years to market goodwill and deep economic and social property with India. however nationalist sentiments all told these countries – typically directed against India because the region's predominant power – can still gift a challenge (Jaishankar, 2016). Nepal wants stepping into treaties and agreements on the premise of equality and mutual interest, by reviewing past treaties. Nepal-ChinaRelationNepal and China share deep unmoving and age previous friendly relations with one another. the wedding of Nepalese aristocrat Bhrikuti Devi with the emperor of Thibet, SongtsanGampo in seventh century (Chinese Buddhist Enclopedia), visit of Nepali craftsman Araniko to China within the thirteenth century and visits to Nepal by Chinese monks and students at totally different periods in history made-up a solid foundation withinthedevelopmentofNepal-Chinarelation(Bhandari,2017). Nepal and China formally established diplomatic relation in 1955. At present, Nepal and China enjoys friendly and cordial relation by respecting every other's sovereignty, territorial integrity and independence. The Chinese Embassy to Nepal (2007) has characterisedNepalChina relations as supported "trust, equality and sincerity". It more adds; The two countries ne'er threat one another, hurt {each different one another} or doubt one another; however forever respect every other, believe one another and facilitate one another. The Chinese Government and folks firmly pursue the principle that a rustic is equal with others in spite of however massive or little it's. within the past fifty years, imperishable by the 5 Principles of Peaceful being, through equal dialogue, communication and coordination, China and Nepal have created wonderful cooperation and achieved nice accomplishments in bilateral political relations, regional affairs and international forums... China treats Nepal as its highest neighbor and relief. we tend to extremely appreciate the sturdy support Nepal has given to United States of America over the years on the queries of Taiwan and Thibet and different major problems associated with China's sovereign rights and interests. (Chinese Embassy to Asian country, 2015) Nepal has continuously shown sturdy commitment to 'One China Policy' and has ne'er allowed its soil to be used for any hostile activities against China. China has conjointly supported late king Birendra's proposal to declare Nepal Kingdom of Nepal nation as 'Peace Zone' and has ne'er interfered with the inner affairs of Nepal and extremely revered the road of development chosen by the Nepalese individuals (Chinese Embassy, 2007). China has been the great partner in Nepal's development endeavor. During this means, Asian country and China square measure enjoying smart relations with one another. Nepal-India Relation Nepal and Republic of India conjointly share antique and deep stock-still relations with one another. not like

China, there square measure a lot of ups and downs in Nepal-India relations. Despite this bitter truth, Nepal-India relation is multifaceted and it's primarily characterised by an open border and a powerful contact between folks to folks. Within the past, Nepal and India had shared a really wonderful and friendly relation that was primarily based on culture, faith and trade. Wedding of Nepalese princess Sita with the patrician of Ayodhya, Ram visit of Char Dham in India by Nepali Hindu journey; visit to Pashupatinath and Muktinath by Indian Hindu pilgrimage, and cross border wedding between Nepali and Indian nationals from ancient time until date square measure the history building blocks of Nepal-India relations. Nepal and India formally established diplomatic relation in 1947. At present, Nepal-India relation is basically directed by 1950 India-Nepal written agreement of Peace and friendly relationship that Nepalese aspect considers as unequal. India has greater- and unnatural influence in Nepal's internal politics that isn't likeable by the Nepalese nationals. Though Asian country and Republic of India have reached the agreement to revise all the previous unfair treaties-especially 1950 India-Nepal written agreement of Peace and friendly relationship, they're not finalized however. There exists 2 different relationships between Nepal and India. Folks to folk's relation area unit forever smart and stable whereas the govt. to government relation has several ups and down and is incredibly volatile. There square measure some border disputes between Nepal and India that conjointly create state of affairs tense within the border space fairly often. Despite of these facts, Nepal is within the position to take care of smart relation with India respecting every other's sovereignty, integrity and independence. India's outlook towards Nepal will best be understood by the statements of Indian Embassy to Nepal (2015) on new constitution, publicised by taking the support of over 2third majority of constituent assembly members, as: Nepal's second Constituent Assembly publicised a Constitution on twenty September 2015 amid protests by Madhes-based parties and different teams. The govt. of India has expressed grave concern relating to the continuing protests and has urged the govt. of Nepal to create efforts to resolve all problems through a reputable political dialogue. This statement implies that India has their own concern and interests on Nepal's domestic problems. This daysthe govt. Nepal and Indian have began to create intellectual response to review the 1950 treaties. Once the appliance of recent constitution in Nepal, state of affairs has modified and left alliance has fashioned the govt. from the centre to the foremost native levels in Nepal| government of Nepal. During this means, Nepal and India have each friendly and hostile relation between them. Result of China-Nepal Discussion help to Develop Nepal China has remained together of the main donor countries for Nepal. Nepal and China first signed an agreement on aid in 1956. China has been providing money and technical help to Asian country within the areas of infrastructure development, transportation, industrial development, health, education, hydro power development and then on. a number of the main comes designed below Chinese help are: Arniko route, Prithvi route, capital of Nepal route, Pokhara-Baglung Road, SyaphrubesiRasuwadhi Road Project, Bansbari animal skin and Shoes works, Hetauda Cotton Textile Mills, Harisidhi Brick works, Bhrikuti Paper Mills, Lumbini Sugar Mills, Sunkoshi hydroelectricity Plant, Pokhara Water Conservancy and Irrigation Project (Multipurpose), B.P. Koirala Memorial Cancer Hospital, government officials Hospital, National Ayurvedaanalysis Centre Sports, Satdobato Sports complicated, hall in capital of Nepal and Birendra International Convention Centre (MOF,2014). Also, the continuing comes below Chinese help include: higher Trishuli Hydropower Project, capital of Nepal route

Improvement Project, Pokhara International Regional aerodrome, and National Armed law enforcement agency Academy Project (MOF, 2014). With the linguistic communication of the note of Understanding on Cooperation below the one Belt and one Road Initiative on 12 might 2017 in Katmandu capital between Nepal and China, new avenues for bilateral cooperation within the reciprocally in agreement area unitasareexpected too pen Tradeand Investment China is that the second largest commerce partner of nepal. In 2015/16, total exports to China stood at US\$181 million with marginal increase from US\$179 million within the previous financial year. In distinction, import from China has been growing at the speed of thirty-nine per cent annually. It rose from US\$421 million in financial year2009/10 to US\$1,247 million in financial year 2015/16. Though China has given zero tariff entry facility to over 8000 Nepali product that starts from 2009, Nepal exports solely 370 product together with noodles and agro product to China (MOFA,2017). China is that the largest supply of Foreign Direct Investment in Nepal. Chinese investors have shown intent to payover \$13.51 billion in throughout the Nepal Investment Summit finished in capital of Nepal inMarch2017 (TheKathamanduPost,2017). Tourism. It will be the main boost to Asian country business sector of huge Chinese tourists, by air visit Nepal in 2018 for sure, in line with NTB. Asian country received a complete of 104,664 Chinese tourists in 2017, in line with Nepal's Department of Immigration. China is that the second largest supply of foreign tourer to Nepal. Over one large integer Chinese tourists visit Nepal annually. China has selected Nepal because the 1st tourer destination in South Asia for its folks. the govt of Nepal has waived visa fees for the Chinese tourer effective from one Jan 2016 (Xinhua internet,2018). Recent Development in Nepal-China Relation One of the landmarks in Nepal-China relation was designed once the then Prime Minister K.P. Oli signed Transit and Transport Agreement in his official visit to China in 2016. At present, Nepal and China area unit enjoying terribly friendly, broader and deeper relation followed by frequent exchange of high level officials' visit from each side. Nepal and China have new tangent treaties for various purpose of deem well in concert belt and one road initiative. Within the recent years, the leaders of Bharat and China have targeted on development and economic prosperity. They need created important advancement in road, railway and marine property. Xi Jinping's bold project of 1 belt one road has the aim to be connected with regarding sixty countries of Asia, Africa and Europe. President Xi Jinping includes a vision of making a 'community of common destiny' through 'Go West' and 'Peripheral Strategy'(Subedi, 2016) Asian country has additionally supported and in agreement with this bold one belt one road project. India Development Aids Nepal and Bharat formally started economic cooperation in 1951(MOF, 2014). Bharat is providing broad spectrum money and technical help in several comes within the past and at the present. a number of the comes completed below Indian help are: Nepal's 1st six airports at Gauchar (1951), Simra, Janakpur, Bhairahawa, Pokhara and Biratnagar, Koshi Barrage, Devighat Hydropower and Irrigation Project, Janakpur-Jayanagar Railway's East –West route , B. P. Koirala Institute of Health Sciences, National Trauma Centre (MOF,2014). Currently, thirty six intermediate and enormous comes like construction of a National academy at Panauti, Nepal India MaitriPashupatiDharmashala at Tilganga, and a technical school at Hetauda square measure at numerous stages of implementation. Trade and Investment India is Nepal's largest trade partner and therefore the largest supply of foreign investments, besides providing transit for pretty much entire third country trade of Nepal. Bharat accounts for over two-third of Nepal's merchandise trade, regarding simple fraction

of interchange services, 12 months of foreign direct investments, virtually 100 percent of fossil fuel provides (Indian Embassy to Nepal, 2017). Asian country has vast deficit with Bharat and it's growing per annum. Indian companies are the most important investors in Nepal, accounting for regarding thirty eight.3% of Nepal's total approved foreign direct investments. There are one hundred fifty operative Indian ventures in Nepal engaged in producing services, banking, insurance, dry port, education and telecommunication, power sector and business industries. Education Indian government is providing around 3000 scholarships/seats annually to Nepali nationals for numerous courses at the Ph.D, master, bachelor and plus-two levels in Bharat and in Nepal. Indian Community in Nepal Around 6, 00,000 Indian national are living in Nepal and around ten,00,000 Nepalese nationals are operating in numerous elements of {india|India|Republic of Bharat|Bharat|Asiancountry|Asian nation} (Nepal India relation, 2017). Nepal and Bharat have gotten open border. There's {a folks|nation|land|country|people} to folks relation among the Indian and Nepalese people whether or not it's within the east or west apparatus space. Recent Development in Nepal-India Relation There was ups and downs in Nepal-India relation within the past. At the present additionally, Nepal and Bharat have terribly volatile and unstable relation – sometime friendly and someday hostile, though Asian country forever needs to own stable relation with Bharat. There has been lack of confidence and mutual trust to at least one another in Nepal-India relation when declaration of recent constitution in 2015 that followed unexpected import barrier from Indian facet. Nepalese nationals' sentiment towards {india|India|Republic of Bharat|Bharat|Asiancountry|Asian nation} isn't smart thenceforth and folks assume that India has its own interests in Nepal's internal problems. So, so as to make smart relation between Asian country and Bharat, Indian government ought to respect Nepal's sovereignty and independence and every one business dealings should be supported equal standing. Indian government is directly and indirectly supporting to Madhes-based parties. Indian government through imposing unacknowledged blockage has desecrated Nepal's trade and transit right. Such influences couldn't promote smart relation among adjacent neighbors. In Nepal Bharat border, we are able to realize several samples of wedding among Indian and Nepali folks. Bharat has reoriented its policy to spice up bilateral ties with Asian country, particularly when Narendra Modi came to power in 2014. One more reason for the Modi government to have interaction Kathmandu at the very best political level is China's increasing investment in infrastructure, energy and different sectors of Asian country. The Federal Democratic Republic of Nepal has historically maintained a non-aligned policy and enjoys friendly relations with neighboring countries. As a small, inland country impacted between 2 larger and much stronger powers, Nepal maintains smart relations with each country the People's Republic of China and Bharat. Since the institution of diplomatic relations between Asian country and China, the contention between Bharat and China has been increasing on Nepalese soil. Bharat needs to uphold its ancient leverage in Nepal; whereas China needs to puncture this relationship and seeks its own area in numerous layers of administration, security agencies, army and not the smallest amount among the folks (Jha, 2010). Asian country remains poor and disadvantaged in twenty first century whereas Bharat has noninheritable a central place within the world with a really high development rate (Kavitha, 2016). The Bharat–Nepal accord of Peace and friendly relationship of 1950 forms the bedrock of the special relations that exist between India and Asian country. At

that point there was autocratic amphibian genus regime and shut society in Asian country. Individuals had started obtaining organized against the {rana|Rana|genus amphibian genus|amphibian genus} rulers and therefore the Rana rulers too were simply thinking a way to prolong their rule. The pact signed in such a context isn't appropriate for gift democratic things. Below the provisions of this accord, the Nepalese voters have enjoyed unique blessings in Bharat, that availed facilities and opportunities at par with the Indian voters. The accord has allowed Nepal to beat the disadvantages of being a land-locked country. Starting with the 12-Point Understanding reached between the Seven Party Alliance (SPA) and therefore the Maoists at city in November 2005, the govt of Bharat welcome the roadmap arranged down by the historic Comprehensive Peace Agreement of November 2006 towards political stabilization in Nepal through peaceful reconciliation and inclusive democratic processes. Nepal and Bharat area unit thus well delimited by numerous social, economic, geographical, cultural, and faith ties (Saran, 2017). Basically, opposing Bharat sentiment is growing in Nepal particularly when Indian blockade of 2015. Treaties finished between the 2 countries in numerous times have forever remained debatable. By realizing the actual fact, a joint mechanism with a gaggle of policy professional referred to as Eminent Persons cluster (EPG) has started reviewing all the treaties antecedently signed between Asian country and Bharat (The capital of Nepal Post, 6 July, 2016;1) Conclusion Nepal has age recent and deep unmoving relations between each China and Bharat. Nepal-China and Nepal-India relations have evolved through totally different circumstances, stages and periods until date. Nepal-China and Nepal-India relations have multitude linkages- starting from social, cultural, religious, geo-political, and economic to diplomatic affairs. One belt one road is that the milestone purpose for each Nepal and China of twenty first century. There's additional mutual trust and fewer - or no disagreement-in Nepal-China relations however there area unit less mutual trust and additional disputes in Nepal-India relation. the best challenges in Nepal's foreign relations, at the current context, are: to make smart mutual trust and win confidence Indian from in Nepal-India relations, to take care of balanced and equal distance in relations with China and Bharat, to create China and Bharat be a part of hands along for broader, deeper and stronger economic ties for equal mutual edges of all. when the declaration of recent constitution and new election being command thereunder, China and Bharat should be prepared in re-structuring foreign affairs with Nepal within the modified perspective from newer dimension. Also, economic process, development and prosperity should take central stage whereas redefining and rewriting the matched and triangular relation between Nepal, China and Bharat, keeping respect for every other's national sovereignty, integrity and independence intact. Last, Nepal's foreign relation with China and Bharat should be directed towards regional peace, integrity and prosperity.

References

- Bhandari, Bibek (2017). China's Cultural debt to Nepalese artist in the 13th century court of Kubal Khan. <http://www.scmp.com/magazines/post-magazine/long-reads/article/2122813/chinas-cultural-debt-nepalese-artist-13th-century>
- Bhattari, Rajan (2005). Geopolitical specialties of Nepal and international approach to conflict transformation, Nepal: Friends for Peace in Jan 2005. <https://indiamadhesi.files.wordpress.com/2008/10/geopolitics-of-nepal.pdf>

Bhattari, Rajan (2013). Foreign Policy in Nepal, Kathamandu: MaratinChautari, http://nepalpolycynet.com/images/stories/happenings/130526_Invitation_Policy%20Discussion_Copy.pdf

Chinese Buddhist Encyclopedia.

Dahal, G. (2015). *Constitutional Assembly of Nepal Milestone for Peace, Development and Political Stability*: KMC Journal of Interdisciplinary Studies, Vol.4.1, p.70-77.

Embassy of Nepal (2015). <http://www.nepalembassy.org/guiding-principles/>

Government of Nepal Ministry of Foreign Affairs MOFA <http://mofa.gov.np/foreign-policy/diplomatic-relations/>

Government of Nepal Ministry of Foreign Affairs MOFA <http://mofa.gov.np/foreign-policy/foreign-policy/>

India-foreign-relation-2012.pdf

Jaishankar, Dhruva (2016). India's Five Foreign Policy Goals: Great Strides, Steep Challenges, <https://www.brookings.edu/opinions/indias-five-foreign-policy-goals-great-strides-steep-challenges/>

Jha, Hari Bansh (2010). Nepal's Border Relations with India and China.

Kavitha K K, (2016). The Changing Paradigm of India- Nepal Relations: Problems and <http://www.questjournals.org/jrbm/papers/vol4-issue5/B451015.pdf>

Saran, Shyam (2017). *How India Sees the World*. New Delhi: Juggernaut Books.

Savada, Andrea Matles (1991). Nepal and Bhutan: Country Studies,

Shivakoti, Gopal (2013). *Dictionary of Politics Nepali-English-Nepali*, Kathamandu: PairaviPrakashan.

Shrestha, Rajendra B. (2018, 1 January). Foreign Policy Challenges and Opportunities, Kathamandu : The Rising Nepal.

Subedi, Suryaprasad (2016). Kathamandu, Kantipur Publication.

The Kathamandu Post (2017, 4 March). Kathamandu, Kantipur Publication.

The Kathamandu Post (2016, 6 July). Kathamandu, Kantipur Publication.

Xinhuanet (2018). Chinese tourists flock to Nepal during Chinese New Year

Financial Performance of Select Indian CPSEs Using Z-Score

Dr.K.Aparna*

Abstract

Investment decisions in financial assets particularly in equities require understanding of the financial position of the corporate entities. Investors unlike speculators would like to make long term investments. Due to high volatile nature of financial markets as well as corporate entities financial performance, there is a need to predict the future performance based on current performance of these entities. One of the tools used for this purpose is the Edward I Altman's z-score model. This model helps in predicting the financial performance and health of the corporate entities. Based on z-score, the entities are divided into three zones. They are safe, gray, and distress. The companies in distress zone are most likely to become bankrupt. Investment in these companies will prove be risky and the expected returns from the investments may not come true. This categorization helps the investors in choosing best avenues for taking long term decisions with respect to their investment in equities.

Key Words: Financial Performance, Z-score model, Indian CPSEs.

I.Introduction

Investment decisions in financial assets particularly in equities require understanding of the financial position of the corporate entities. Experts in the field like, risk analysts and portfolio managers guide investors in taking decisions and selecting the corporate entities for their investments so that their expectations in the form of high returns will come true. Investors unlike speculators would like to make long term investments. Due to high volatile nature of financial markets as well as corporate entities financial performance, there is a need to predict the future performance based on current performance of these entities. One of the tools used for this purpose is the Edward I Altman's z-score model. This model helps in predicting the financial performance and health of the corporate entities. Based on z-score, the entities are divided into three zones. They are safe, gray, and distress. The companies in distress zone are most likely to become bankrupt. Investment in these companies will prove be risky and the expected returns from the investments may not come true. This categorization helps the investors in choosing best avenues for taking long term decisions with respect to their investment in equities.

II. Objective of the Study

The objective of the present study is to analyse the financial performance and prediction of the probability of becoming bankrupt of select Central Public Sector Enterprises operating in India.

III. Methodology

Edward I Altman (1968) opined that there is a difficulty in using ratios, as to which ratios are most important in detecting bankruptcy potential, what weights should be attached to

* Assistant Professor, Department of Business Management, Telangana University, Telangana State

those ratios and as to how should the weights be objectively established. Altman used this MDA technique to classify firms for predicting their bankruptcy potential.

The discriminant function of the form Z is:

$$Z = v_1X_1 + v_2X_2 + \dots + v_nX_n$$

Where,

v_1, v_2, \dots, v_n = discriminant co-efficients

x_1, x_2, \dots, x_n = independent variables

The MDA computes the discriminant coefficients, V_j and the independent variables X_j are the actual values.

Where $j = 1, 2, 3, \dots, n$.

This model has revised several times and constantly updated the parameters and adapted the indices for different populations of companies. In the year 1995 (Altman), the Z-score analysis was revised. This is an adaption for the manufacturing as well as non-manufacturing companies operating in developing countries. Except the exclusion of fifth variable i.e., X_5 representing the ratio of sales to total assets, the remaining variables of Z'-score model (1983) are similar to Z''-score developed in the year 1995.

The new weighted coefficient thus has a different value. They are:

$$Z'' = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

Where, Z'' = Overall Index

X_1 = Working Capital / Total Assets

X_2 = Reserves and Surplus / Total Assets

X_3 = Profit before Interest and Tax / Total Assets

X_4 = Equity / Total Liabilities

Altman (1983) has divided the firms using Z-score in to three zones of discrimination and it is presented in the table below.

TABLE: 1- ZONES OF DISCRIMINATION		
1	$Z > 2.9$	Safe Zone
2	$1.23 < Z < 2.9$	Gray Zone
3	$Z < 1.23$	Distress Zone

Six Central Public Sector Enterprises (CPSEs) related to three sectors were chosen for the present study. Two CPSEs from Chemicals and Pharmaceutical sector are included in the study. They are Hindustan Insecticides Limited (HIL) and Karnataka Antibiotics and Pharmaceuticals Limited (KAPL). National Fertilizers Limited (NFL) and Rashtriya chemicals and Fertilizers Limited (RCFL) are the two CPSEs from Fertilizer sector. Two CPSEs from Steel sector are included in the study. They are Ferro Scrap Nigam Limited (FSNL) and Mishra Dhatu Nigam Limited (MDNL). Data has been collected for a period of nine years from 2007-08 to 2015-16.

IV. Analysis and Inferences

Z-score of Hindustan Insecticides Limited (HIL), one of the Chemical and Pharmaceutical CPSEs is found to be in safe zone for the first five years of study (Table-2). During the year 2012-13 it has slipped from safe zone to gray zone i.e a comfortable zone to zone of ignorance. Altman (1968) has compared gray zone as zone of ignorance. However, while analyzing the Z-score of any entity, it is important to analyze the trend overtime. If a low or declining Z-score is observed in the recent past, a warning sign can be given to investors. The Z-score of HIL from the year 2011-12 is continuously observed to be

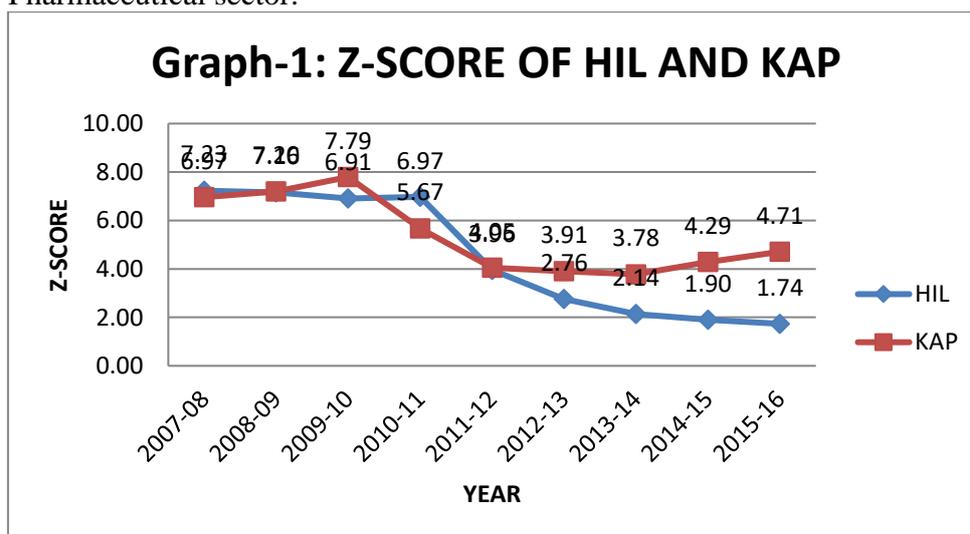
decreasing till the last year of study i.e 2015-16. Further, there are high chances of falling down further.

**TABLE-2:
Z-SCORE OF HINDUSTAN INSECTICIDES LIMITED AND
KARNATAKA ANTIBIOTICS AND PHARMACEUTICALS LIMITED
(KAPL)**

YEAR	HIL		KAP	
2007-08	7.23	Safe	6.97	Safe
2008-09	7.16	Safe	7.20	Safe
2009-10	6.91	Safe	7.79	Safe
2010-11	6.97	Safe	5.67	Safe
2011-12	3.96	Safe	4.05	Safe
2012-13	2.76	Gray	3.91	Safe
2013-14	2.14	Gray	3.78	Safe
2014-15	1.90	Gray	4.29	Safe
2015-16	1.74	Gray	4.71	Safe

Source: Authors Calculations

Z-score of Karnataka Antibiotics and Pharmaceuticals Limited (KAPL) which is another CPSEs in the Chemical and Pharmaceutical sector selected for study is observed to be in the safe zone during the whole period of study from table 2. The lowest z-score is observed in the year 2013-14. Graph 1 depicts the z-score of these two CPSEs from Chemicals and Pharmaceutical sector.



Z-score of National Fertilizers Limited (NFL), one of the CPSEs from Fertilizer sector is found to be in safe zone for the first four years of study (Table-3). During the year 2011-12 it has slipped into gray zone. Further, the worst situation has been continued for the next four years from 2012-13 to 2015-16. It is in the distress zone. Z-score of Rashtriya

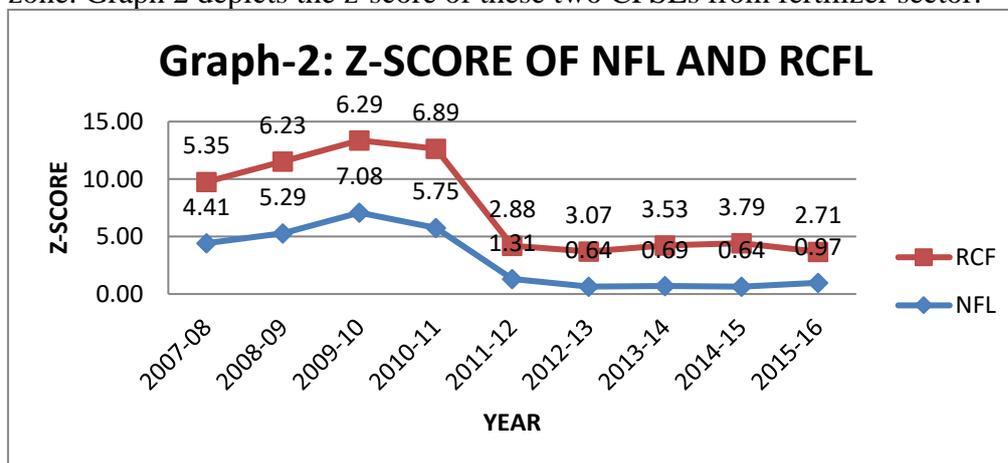
chemicals and Fertilizers Limited (RCFL), another CPSEs from Fertilizer sector is found to be in safe zone for the first four years of study.

**TABLE-3:
Z-SCORE OF NATIONAL FERTILIZERS LIMITED (NFL) AND
RASHTRIYA CHEMICALS AND FERTILIZERS LIMITED
(RCFL)**

YEAR	NFL		RCF	
2007-08	4.41	Safe	5.35	Safe
2008-09	5.29	Safe	6.23	Safe
2009-10	7.08	Safe	6.29	Safe
2010-11	5.75	Safe	6.89	Safe
2011-12	1.31	Gray	2.88	Gray
2012-13	0.64	Distress	3.07	Safe
2013-14	0.69	Distress	3.53	Safe
2014-15	0.64	Distress	3.79	Safe
2015-16	0.97	Distress	2.71	Gray

Source: Authors Calculations

During the year 2011-12 it has slipped into gray zone. Further, the situation has been recovered and continued for the next three years from 2012-13 to 2014-15. It is in the safe zone. Graph 2 depicts the z-score of these two CPSEs from fertilizer sector.



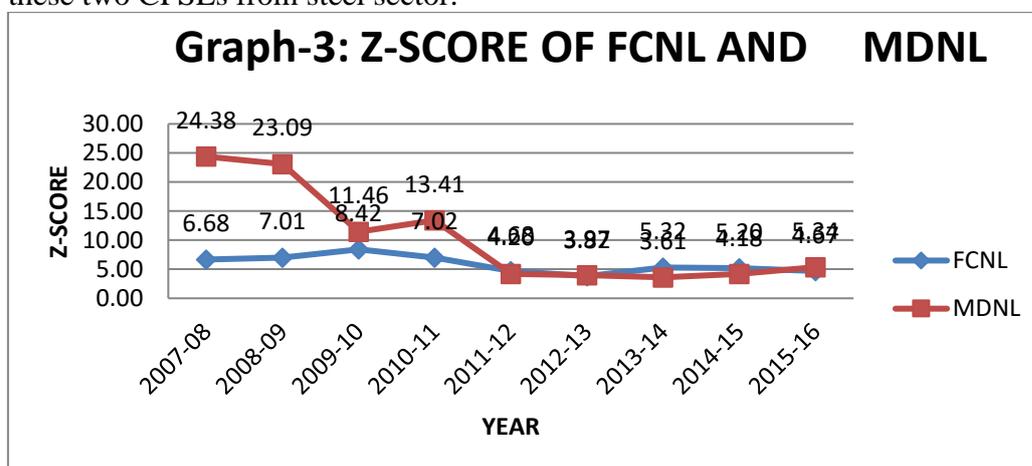
Z-score of Ferro Scrap Nigam Limited (FSNL), one of the CPSEs from steel sector is found to be in safe zone for all the years of study (Table-4). During the year 2011-12 it has slipped from a very high score of above seven to 4.68. Further, the worst situation has been continued for the next year. The Z-score has found to be improved and it touched the point of 5.32 by the end of 2013-14. The Z-score of Mishra Dhatu Nigam Limited (MDNL), another CPSEs from steel sector is found to be in safe zone during the period of study.

**TABLE-4:
Z-SCORE OF FERRO SCRAP NIGAM LIMITED (FSNL) AND
MISHRA DHATU NIGAM LIMITED (MDNL)**

YEAR	FCNL		MDNL	
2007-08	6.68	Safe	24.38	Safe
2008-09	7.01	Safe	23.09	Safe
2009-10	8.42	Safe	11.46	Safe
2010-11	7.02	Safe	13.41	Safe
2011-12	4.68	Safe	4.20	Safe
2012-13	3.82	Safe	3.97	Safe
2013-14	5.32	Safe	3.61	Safe
2014-15	5.20	Safe	4.18	Safe
2015-16	4.67	Safe	5.34	Safe

Source: Authors Calculations

However, during the year 2011-12 the score is observed to be reduced drastically from 13.41 to 4.20. The decreasing trend is found to be continued. Graph 3 depicts the z-score of these two CPSEs from steel sector.



V. Conclusion

The Z-score which is used as a guide for investors in taking investment decision is applied to central public sector enterprises operating in India. The companies are from Chemicals and Pharmaceutical, fertilizer and steel sectors.

Z-score of Hindustan Insecticides Limited (HIL) and Karnataka Antibiotics and Pharmaceuticals Limited (KAPL) is found to be reducing during the period of study. This indicates the unsatisfactory financial health of the two companies. Z-score of National Fertilizers Limited (NFL) and Rashtriya chemicals and Fertilizers Limited (RCFL) is observed to be reducing marginally during the period of study.

Z-score of Ferro Scrap Nigam Limited (FSNL) and Mishra Dhatu Nigam Limited (MDNL) clearly depicts that the financial performance of these two companies is not good and satisfactory. From the year 2011-12, financial performance of these two companies is found to be downtrodden. However, as a choice for the investors to select companies for investment, Karnataka Antibiotics and Pharmaceuticals Limited can be chosen.

References

1. Public Enterprises Survey, Department of Public Enterprises, GOI, Various Issues.
2. Donald A. Hay, (2001) 'The Post-1990 Brazilian Trade Liberalisation and the performance of Large Manufacturing Firms: Productivity, Market share and profits', *The Economic Journal*, Vol.111, No.473, pp. 620-641.
3. E. Grifell-Tatje and C.A.K. Lovell, (1999) 'Profits and Productivity', *Management Science*, Vol.45, No. 9, pp. 1177-1193.
4. The Altman Z-score, <http://www.aaii.com/computerizedinvesting/article/the-altman-z-score.pdf>
5. Menaka, (2015) 'Financial performance of Navratna companies in India-Central public sector', *IJMSS*, Vol.3, Issue.3, pp-488-504.
6. Prasanna Chandra, 'Financial Management, Theory and Practice', Tata McGraw Hill Publications. 6th edition, PP. 92.
7. Roli Pradhan, 'Z Score Estimation for Indian Banking Sector', *International Journal of Trade, Economics and Finance*, Vol. 5, No. 6, December 2014, pp.516-520.
8. Jasmine Rose Chieng, 'Verifying the Validity of Altman's Z' Score as a Predictor of Bank Failures in the Case of the Eurozone', <http://trap.ncirl.ie/865/1/jasminechieng.pdf>
9. Suzanne K. Hayes, Kay A. Hodge and Larry W. Hughes, 'A Study of the Efficacy of Altman's Z To Predict Bankruptcy of Specialty Retail Firms Doing Business in Contemporary Times', *Economics & Business Journal: Inquiries & Perspectives*, Vol. 3, No. 1, October 2010, pp.130-133.

India and Myanmar Relationship: An analysis

Bilal Ahmad Mir*

Tariq Rashid wani**

Gulzar Ahmad Chopan***

Abstract; *the paper attempted to highlighted India relationship with mynamer, which are closely interconnected to each other. The link of promomixty and cordidity between india and myanmar has influenced their bilateral relations, the paper highlights India's relations with mynamer during NDA and UPA government identified some issues which hinder their bilateral relationships.*

Key words, India and Myanmar Relationship, Narendra Modi External Affaires

Introductin

Myanmar had approach to accomplish critical significance in Asian strategic concerned in the since its origin. A series of developments, both internal and external, had escalated concerns about the long term security, stability and independence of mainland Southeast Asia's largest country. Myanmar's strategic value was born out of its geographical location, a country having an area of approximately 678,500 square kilometers and a population of over 48.8 million, lying at the juncture of three regions within Asia-East Asia, Southeast Asia and South Asia, Myanmar also had the undesirable situation of being straddled by two Asian giants viz. India and China. It had a significant coastline in the South along the Bay of Bengal and Andaman Sea, which provided entrance to the Indian Ocean. It was also located in a region which had witnessed wonderful economic growth since self-government.

Objectives of the study

1. To analysis the India's Policy towards Myanmar
2. To find out the importance of Myanmar for India. and
3. To assess the challenge and future prospects of Indo- Myanmar Relations.

1.3 Methodology

The methodology undertaken in this resech paper includes historical and analytical methods. The historical records and official document are examined: primary as well as secondary sources that are available on the subject have been used. A primary source includes policy documents, reports, official statements and interview of policy makers. In the secondary sources, the major works of different distinguished authors in the field have also been m included and analysed.

* Ph.D. Researcher Scholars Department of Political Science and Public Administration, Vikram University Ujjain

** Ph.D. Researcher Scholars Department of Political Science and Public Administration, Vikram University Ujjain

*** Ph.D. Researcher Scholars Department of Political Science and Public Administration, Vikram University Ujjain

Discussion

Burma's relations with India during 1948-1962

During the first phase, 1948-1962, India and Myanmar had friendly relations. The first Prime Minister of Myanmar, U Nu, had close friendly relation with Indian Prime Minister Pundit Jawaharlal Nehru, and used to consult Nehru on many issues of mutual cooperation. Nehru always, had laid emphasis on the maintenance of Indo-Burmese friendship despite minor differences that might crop up in future. In December 1949, in a message to the Friends of Burma Society, Nehru said, "it is inevitable that India and Burma should co-operate each other for mutual advantages and we must not forget this fact even though we might have occasional differences but we cannot change our history and geography."ⁱ Since 1950, Indo-Burmese relations had become so informal that the Burmese Prime Ministers or other members of the Burmese Government had been welcomed in Delhi whenever they felt the need to discuss their problems with Nehru and the Indian Government. The most important development in Indo-Burmese friendship had taken place on 7 July 1951 when the two countries had signed a treaty of friendship. The signing of the treaty had a concrete step towards strengthening and developing the already existing friendly relations between them. The treaty which was to be effective for five years had been signed in Rangoon on 7 July 1951 by Sao HkunHkio, the Burmese Foreign Minister and M.A. Rauf, the first Indian Ambassador to Burma. M.A. Rauf, speaking on the occasion of the signing of the treaty said that the treaty had merely a token and symbol of the great goodwill which had already existed between India and Burmaⁱⁱ. India and Burma had cooperated and maintained friendly attitude not only on bilateral level but also on regional level. During the post-independence period, they had made sincere efforts to ensure the peace and security of the region. In this way, the year 1954 had marked the beginning of good neighborly relation between India, Burma and China. The five principles of peaceful co-existence, namely, "Panchsheel" firstly, had been formulated in the preamble to the agreement between India and China signed on 28 April 1954 at New Delhi. On 29 June 1954, Myanmar and China also, had signed the Panchsheel agreement in Yangon in order to make Panchsheel the basis of permanent relations with India and Myanmar and reaffirm adherence to five principles of peaceful co-existence. Indo-Burmese relations are not confined to the walls of bilateral and regional matters. They jointly played an important role in world politics. At a time when the world had been divided into two power blocs, both India and Myanmar followed the policy of non-alignment. Their aim had to bring more and more countries to the non-aligned bloc and in that process lessen world tension and maintain world peace. India and Myanmar also, had owed their deep faith in the institution of the United Nations as a Mechanism for ensuring global peace. Thus, friendly atmosphere maintained at the higher levels between Nehru and U Nu ensured that no gross injustice had been inflicted on Indians. Both Prime Ministers had handled the problem of Indian citizenship, immigration and compensation etc.ⁱⁱⁱ

After U Nu's visit to India in April 1948 for seeking arms and common wealth loan, a pattern of consultation and cooperation had begun to characterize the official relations between India and Burma. With India occasionally, had prepared to show great consideration the case of Burma, it was the 'wider issues', like world peace and cooperation on international issues, especially Asian problems, which had engaged the attention of Burma and India. This attitude on the part of Burma and to a lesser extent on the part of India also resulted in the gradual recession of Indian special interests as an important factor

in Burma –India relations .One of the first instances of consultation and cooperation in this context was the case of India's arms aid to Burma. Another instance, coming under the category of 'wider issues ', was India's agreeing to Burma 'request to allow her to be the first state outside the communist bloc to recognize the new Chinese People's Republic.^{iv}.Burma had recognized communist. China on 18th December ,1949 and India had followed Burma on 31st December.1949.A similar case of indo-Burma consultation on a wider problem had taken place in October 1951 when U Nu had paid a ten days visit (October 22-31)to India where his main topic of discussion with Nehru was the signing of a peace treaty with Japan .^v At New Delhi on 23rd october1951, U N said at a press conference that Burma had "very close relations with India in our foreign policy,"and that Burma like India would have separate agreements with Japan.^{vi}.U Nu's visit showed that Burma had been taking more and more interest in close consultation and cooperation with India as stipulated in the indo-Burma treaty of Friendship. India and Burma at this timehad faced the same set of international problems and shared common views regarding the emergence of the new china as an active force on the side of a long,and in parts undemarcatedfrontier.^{vii}. Another problem directly concerning Burma had been the presence of kuominatang troops inside Burmese territory and possibility of communist China invading Burma in pursuit of those troops which had been also a matter of discussion between India and Burma at this time. Burma had been consulting India closely on this matter since early 1951.^{viii}.In March and April 1953, important discussions in the matter had taken place between India and Burma .The occasion was the joint tour by U Nu and Nehru along the indo-Burma frontier where U Nu had met Nehru at Imphal on 29th March .1953 and made a joint tour of the border regions, inhabited by Nagas, who lived on both sides of the border .this visit had been in response to an invitation extended to Nehru by U Nu three months before. Coinciding with this joint tour of U Nu and Nehru on the indo-Burma border, was a problem of the presence of Kuomintang troops eastwards near the Sino-Burma border. Indian public and official opinion fully, had supported Burma's case .Nehru, on 17th, March 1953, in a speech before parliament had described India's relation with Burma as "very friendly".Mentioning Burma's problem he said "In the northeast of Burma a tremendous problem has existed for some time because of the existence of some of the so-called Kuomintang troops. Through out this period our with Myanmar has hardly ever been so cordial and friendly as they are now."^{ix}.Nehru at a prèss conference on 28th March,1953, a day before he met U Nu at Imphal had clearly stated that India's attitude regarding .Burma's complaint in the united Nations could be to support that complaint.^x.Thus it was under these circumstances that U Nu did meet Nehru at a joint frontier tour of the border during the last three days of March 1953. The Burmese case had strongly been supported by Nehru at their joint tour at time. Thus it had appeared to the Burmese government and people that India could fully cooperate with Burma on this matter both in and outside the United Nations.^{xi}Later in the United Nations, India's Reprmentatives V.K .Krishna Menon,while speaking in the debate on this question in the political committee on 17th April,1953,had expressed his delegation's deep concern in the matter," because it felt that any violation of the honors of Burma or any wrong done to that country was as significant to it as a wrong to India."^{xii}.Speaking again in the same committee on 22nd April, Mr.Menon reiterated his government's concern, and said that the aggression "was obivoius"and that the occupation of 50,000 square miles of Burma's territory by foreign troops was an "absolutely illegal situation."^{xiii} .On 14th October,

together with eight other countries, India had supported a resolution calling on foreign troops in Burma to lay down their arms or to submit to entertainment. ^{xiv}. On another occasion, the Indian delegate, in another debate on the same topic in the same committee on 5th November, 1953 warned: "What hurts Burma hurts us equally. We have no military alliance but Burma is closely linked to us and it is naturally of great concern to us that she should suffer."^{xv}. Throughout 1953 and 1954, India had deeply been concerned with the security of Burma and Burmese government had kept India fully informed about it. This had been thus a special case of Burma's consultation with India and asking India's cooperation in the vital issue seriously engaging the attention of the Burma government and people. This problem had great internal and international implications for the union of Burma^{xvi}

On the diplomatic level, the Burmese government had maintained intimate and intimate and informal relations with the Indian government. The Burmese government had engaged in frequent mutual consultations with the Indian government and Indo-Burmese relations became so informal that the Burmese or other members of the Burmese government welcomed to India whenever they had chosen to come to New Delhi to discuss their own problems or common problems with Mr. Nehru and the Indian government. Indeed Nehru invited Burmese' government to New Delhi. Finally, U Nu came to meet him. On the diplomatic level Burma closely had cooperated with India in the United Nations and Indian continued to give strong support in 1954 to Burma's complaint against the activities of the K.M.T. troops in the Burmese territory.

At the accepting invitation of the government of India, the Health Minister of Burma had visited India in November, 1954. Several Burmese missions of exports and two ministers had toured India during the year to study construction as well as development schemes. They had visited community projects, shipyards, defense installations, research institutions and some important educational, cultural and health institutions.^{xvii}

In New Delhi on 25th March, 1955 U Nu had arrived to discuss with Nehru, the international situation, especially US - China conflict and at a press conference in New Delhi the following day, stated that the Bandung conference would not be anti-west. He also had discussed with Nehru the outline of the agenda of the ensuing Bandung conference.^{xviii} U Nu had been met by Nehru on 14th April, 1955 at Rangoon and conferred with him, stayed there for two days from where they went to Bandung and contributed to the success of that conference.^{xix}. Burma's friendly relation with India grew in strength during the year 1955. The two Prime Ministers met a number of times during the year and held discussions on subjects of common interests as well as international relations. As regards mutual relation between the two governments, the government of Burma was very much appreciative of Indian help to them in their economic difficulties arising out of the fall in price of Burmese rice in the world market especially after the Korean armistice.

The year 1956 marked further strengthening of the already close relationship between Burma and India. An economic Delegation headed by U Ranched, Burmese Minister for trade Development visited India on 18th May, 1956 and as a result of the week long conversations and negotiations, the government of Burma concluded an agreement on 29th May, 1956 regarding the purchase of two million tons of rice from Burma over a five year period to enable Burma to dispose off her surplus stocks.^{xx}. As the New Year 1958 started, there was tremendous fund of goodwill for India in Burma. Burma was very much

impressed by the role of India was playing in post-war Asia.¹⁰⁵ As an example of goodwill, India returned to Burma six historical guns captured by the British during the Burmese war.^{xxi}

Burma's relations with India during 1962-1992

The second phase (1962-1992) under General Ni Win and his Revolutionary Council was an era of complete political isolation of Myanmar. During this period India's policy towards Myanmar was to maintain an active or close relation. General Ne Win policy of political suppression and restriction of Indians and deportation of around 100,000 Indians^{xxii} was not supported by India and widened the gulf between India and Myanmar. Fluctuation in relations could be seen at this time also. Under his Burmese way to Socialism and Enterprises Nationalization Law, General Ne Win expelled about 300,000 Indians even though most of them had been in Myanmar and had never previously left it^{xxiii}. Talks between the leaders of India and Myanmar were carried out on the issue but with no positive outcome. In the whole, diplomatic relations remained cordial but mostly formal. Prime Minister Indira Gandhi had meetings with General Ne Win during her tenure. The Myanmar visit by Prime Minister Rajiv Gandhi in 1987 was a sincere endeavor to inject fresh momentum into the relationship, but it was overtaken by the turbulent events that shook the country to its core. However, it was only from 1988, with the mass uprising in Myanmar, that India started taking active interest in the affairs of the country. When the democracy uprising of 1988 broke out in Myanmar the fallout impact was felt immediately in India. Among the proximate neighbors of Myanmar, it was India alone that officially followed a clear-cut policy as regards to supporting the democracy movement. Indian Prime Minister Rajiv Gandhi appeal to the ruling State Law and Order Restoration Council (SLORC) for the release of Aung San Suu Kyi. A program called 'Voice of Burmese People' was subsequently started from September 1989 in the All India Radio's Myanmar Service to express solidarity with the democratic forces.^{xxiv} The relations between the two countries breathed its lowest level when, it was discovered that Indian embassy was involved in 88 uprising and providing safe passage to the students of Myanmar and assuring them of political asylum. At that juncture, New Delhi was of the view that a democratic regime in Myanmar would be more sympathetic to India's national security interest. Early 1990s saw a gradual policy shift in the attitude of the Government of India towards the SLORC regime. Within the government, there was strong protest from many of the military intelligence, and foreign ministry officials against the policy of supporting the democracy movement and sidelining the Junta regime at the cost of national interest. Shift in the stance of India became necessary with the changing strategic economic and security concerns.

Burma's relations with India during 1992- 1998

After the end of Cold-War, New Delhi sees Myanmar as an important "land-bridge" on its path to the consolidation of ties with Southeast and East Asia. Myanmar thus fits in very well into India's regional plans. On the other hand, Myanmar's India policy has been largely based on its desire to diversify its external engagement. The need for diversification was felt in the face of increasing dependence on China in the late 1990s, which prompted its leadership to reach out to other countries and India was seen as a potential counter-

weight to China. Furthermore, Myanmar's military leadership believes that its improving relation with India boosts its 'international image and legitimacy'.

The Indian government, owing to domestic pressures, even risked sacrificing its thin linkages with the Burmese military rulers. On 10 November, 1990, two Myanmar students hijacked a Thai plane from Bangkok to Calcutta to draw the^{xxv} international attention to the situation back home. After the nine hour hijacking drama, the two students gave themselves up to the Indian authorities. After three months in the Calcutta jail, both students were released on bail. Thirty eight members of Parliament signed a petition requesting the then Prime Minister Chandrasekhar to give them political asylum in India, which was subsequently granted. The All India Radio (AIR) carried out anti-military broadcasts in Burmese language, souring further the relations between two countries.^{xxvi} In 1991, India, however, acceded to the requests of the Myanmar's government to stop these broadcasts. Burmese government formally complained that Than Nu, the daughter of U Nu, was using 'abusive' language attacking the government of Myanmar. India's former Foreign Secretary, J.N. Dixit wrote, "Indo-Myanmar relations went into a negative spin in 1990, when the military authorities of Myanmar refused to accept the 1990 electoral verdict of the Burmese people in which Aung San Suu

Kyi, the leader of the National league for Democracy, emerged victorious."^{xxvii} In 1992, India partnered with the USA and other western countries to sponsor a United Nations resolution condemning the Burmese military junta for its violations of human rights. India earlier, however, had refused to join USA, UK, Germany and Japan to formally present a protest to then military regime against not respecting the result of May 1990 elections.^{xxviii} However, between 1991 and 1992, the foreign policy establishment in India started reviewing its foreign policy towards Myanmar. The Burmese army had stepped up its military campaigns along the border of the country, including on the Indo-Burmese border. There were waves of refugee exodus from Burma to neighboring countries as a result of military campaigns. In particular, hundreds of Naga refugees fled to Nagaland in India in the beginning of 1992. India protested over this Naga refugee issue and asked the Burmese government to stop atrocities on innocent villagers on the border. Later, India and Burma worked together for the repatriation of these Naga refugees to Burma. In 1992, the Burmese government responded positively to India's offer to normalize the bilateral relationship. An eight-member Burmese delegation led by U Aye, Director-General of the Political Affairs Department of the Ministry of Foreign Affairs, visited India on 11 to 14 August 1992 and met the senior officials in the ministries of External Affairs, Home, Defence and Commerce of the Government of India. This was the first ever official Indo-Burmese senior-level meeting since Rajiv Gandhi's visit to Burma in 1987. In 1993, India's Foreign Secretary J.N. Dixit visited Rangoon and met the Burmese leaders including Lt. General KhinNyunt.^{xxix} At the same time, India specifically asked the Burmese government to release all political prisoners and stressed that India continued to support restoration of democracy in Burma. In January 1994, Burma's Deputy Foreign Minister U NyuntSwe visited India; during his six day visit, he held a series of meeting with Indian ministerial officials and discussed wide-ranging issues to improve the relationship between the two countries. A Memorandum of Understanding (MoU) was signed on 21 January 1994 to increase cooperation between the civilian border authorities of the two countries and to prevent "illegal and insurgent activities".

India's relation with Myanmar during National democratic alliance

The national democratic alliance (NDA) from 19 march 1998 to 22 may 2004) atalbehari vajpayee was twice premier of india, first from 16 may to 1 june 1996, and then from 19 march 1998 to 22 may 2004. A member of the bharatiyajanata party (bjp), vajpayee served as the eleventh prime minister of India. He headed the bjp-led national democratic alliance in the indian parliament, and became the first prime minister unaffiliated with the indian national congress to completed a full five-year term in office.^{xxx}

The external affairs minister of india (eam) shrijaswantsingh, accompanied by a high level delegation, paid an official visit to myanmar (february 13 to 15, 2001) at the invitation of h.e. U winsaung, minister of foreign affairs of the government of the union of myanmar (list of delegates is at annexure i). This was the first visit by an external affairs minister of India to Myanmar across the land border between the two countries. While in Yangon, the eam called on H.e. Senior general than shwe, chairman of the state peace and development council (spdc) and prime minister of the union of myanmar and on Lt. Gen. Khinnyunt, secretary-1 of the spdc and held discussions with, h.e. U win aung. During the meeting between eam and the foreign minister, Myanmar ministers of home, industry-i, science and technology, electric power, commerce, national economic planning and development and progress of border areas and national races were also present.

The highlight of the visit was the inauguration of the tamu-kalewa-kalemoyo highway, from the india-myanmar border at manipur, to the western bank of the Chindwin River, on February 13, 2001. Eam, accompanied by four ministers from india's north-eastern states of assam, arunachalpradesh, nagaland and mizoram and the additional chief secretary of manipur, senior officials from the ministry of external affairs, home, power and surface transport as well as the corps commander from dimapur, arrived at the myanmar border town of tamu by iaf helicopter from imphal in the morning of february 13, 2001. A 10-member media delegation also arrived in tamu separately to cover the visit (list of members is at annexure ii).

The two delegations attended a brief but colourful inaugural ceremony at tamu before proceeding by maf helicopter to kalewa, the terminus of the highway project, on the Chindwin River. Thereafter, the delegation drove along the highway to kalemoyo for the main inaugural ceremonies at Phangu Bridge. At tamu, kalewa and all along the route several thousand people of all ages had gathered to celebrate the occasion, waving Myanmar and Indian national flags.

India and Myanmar relations during the United Progressive Alliance (UPA)

The United Progressive Alliance (UPA) came into power in May 2004 after the defeat of The NDA (National Democratic Alliance) in the general elections marks another new era of India's approach to her neighbours and identified as "Manmohan Singh Doctrine" As observed by C. Rajamohan "promoting a peaceful periphery has now become the reigning doctrine in the south block and all successive government after Gujral have adhered to it". The most significant objective UPA government had been to improve the global and regional atmosphere for sustaining India's growth process and overall development.^{xxxii}The most important Feature of this political front was the participation of many regional parties and the left, under the umbrella of the Congress party, immediately after the general elections. The UPA regime was led by the Congress party under the leadership of Manmohan Singh, as the prime Minister. In its foreign policy front, the Common Minimum Programme (CMP) became the fundamental guiding principle of the UPA

government, that it will give high priority to improve bilateral ties with immediate neighbours.^{xxxii}

Prime Minister Manmohan Singh's visit to Myanmar

Then PM Dr. Manmohan Singh's State Visit to Myanmar took place in May 2012 after 25 years, apart from other Agreements and MOUs, an Agreement on USD 500 million Line of Credit was signed with the then President U Thein Sein. Currently, India's commitment to Myanmar's development stands at over US\$ 1.726 billion, which is more than the assistance offered by many other countries.

(i) Memorandum of Understandings on India-Myanmar Border Area Development

(ii) Air Services Agreement between India and Myanmar

(iii) Memorandum of Understanding towards setting up of Myanmar Institute of Information Technology (MIIT)

(iv) Memorandum of Understanding on the Establishment of the Advance Centre for Agriculture Research and Education (ACARE), Yezin Agriculture University, Naypyitaw, Myanmar.

(v) Memorandum of Understanding on the Establishment of a Rice Bio Park.

(vi) Memorandum of Understanding on Establishing Border Haats across the Border between India and Myanmar.

(vii) Memorandum of Understanding on Establishment of Joint Trade and Investment Forum.

(viii) Cultural Exchange Programme 2012 - 15.

(ix) Agreement on Cooperation between Institute of Defence Studies and Analysis (IDSA) and Myanmar Institute of Strategic and International Studies (MISIS).

(x) Memorandum of Understanding regarding a US \$ 500 million Credit Line between Export - Import Bank of India and Myanmar Foreign Trade Bank.

(xi) Memorandum of Understanding between Calcutta University, Kolkata, and Dagon University, Yangon

(xii) Memorandum of Understanding on cooperation between the Indian Council of World Affairs (ICWA) and Myanmar Institute of Strategic and International Studies (MISIS).^{xxxiii}

Myanmar's energy sector would get a boost with Indian companies investing in that country's gas and oil sectors. It is likely that Indian companies would be considered when more oil blocks are auctioned. In addition, border trade would be improved and the overall trade doubled beyond the current \$1.2 billion. Myanmar also once again reassured India support for tackling safe havens of Indian insurgents in its territory.

India's relations with Myanmar during BJP

The National Democratic Alliance (NDA) came into power in May 2014 after defeats the United Progressive Alliance (UPA) in the general elections, marks the new era of India's approach towards her neighbours.^{xxxiv}

The State Visit to Myanmar of Prime Minister Narendra Modi (5-7 September 2017), The State Visit to Myanmar of Prime Minister Narendra Modi (5-7 September 2017), when he visited Nay Pyi Taw, Yangon and Bagan, further led to strengthening of political relationship as well as enhancing people to people ties. Eleven agreements were signed in varied areas such as maritime cooperation, culture, health, police, HRD, election commissions and press councils. Discussions between the two sides focused on issues pertaining to security, terrorism, boundary, defence cooperation, HRD, infrastructure-development projects, energy, and trade and investment. He addressed the Indian

community in Yangon, where is highlighted the historic ties as well as unveiled initiatives of interest to the community.

The External Affairs Minister of India, Smt. Sushma Swaraj, visited Myanmar on 10-11 May 2018

The External Affairs Minister of India, Smt. Sushma Swaraj, visited Myanmar on 10-11 May 2018. During the visit, she called on H.E U Win Myint, President of the Republic of the Union of Myanmar and met H.E. Daw Aung San Suu Kyi, State Counsellor and Minister for Foreign Affairs. During the bilateral meetings, boundary and border related issues, peace & security matters, developments in the Rakhine State, including return of displaced persons, India's development assistance to Myanmar, ongoing projects, and other issues of mutual interest were discussed. The Minister also met the Commander in Chief of the Myanmar Defence Services, Senior General Min Aung Hlaing, during the visit. Seven Agreements/MOUs were signed during the visit. These included: (i) Agreement on Land Border Crossing, (ii) MoU on Restoration and Preservation of Earthquake Damaged Pagodas in Bagan, (iii) MoU on assistance to the Joint Ceasefire Monitoring Committee, (iv) MoU on Training of Myanmar Foreign Service Officers, (v) MoU on Setting up Industrial Training Centre (ITC) at Monywa, (vi) MoU on ITC at Thaton and (vii) Exchange of Letters on extending a maintenance contract for ITC Myingyan. The Agreement on Land Border Crossing is a landmark in bilateral relations between the two countries as it will enable people from both countries to cross the land border with passport and visa, including for accessing health and education services, pilgrimage and tourism. The MoU on restoration of pagodas at Bagan underlines the enduring cultural and historical links between the two countries. The other MoUs on technical assistance and capacity building reflect India's continuing support to Myanmar in accordance with this country's own development plans and priorities. The External Affairs Minister also reiterated India's readiness and commitment to helping the Government of Myanmar (GOM) in addressing issues related to Rakhine State. She welcomed GOM's continued commitment to implementing the Rakhine Advisory Commission's recommendations and noted that, under the aegis of the bilateral Rakhine State Development Programme, India was already in the implementation stages of various projects that would respond to the needs of different sections of the Rakhine State population. The first major project is the construction of prefabricated housing in Rakhine State to meet the needs of displaced persons. The Minister also underlined the need for safe, speedy and sustainable return of displaced persons to Rakhine State. The External Affairs Minister expressed her gratitude to the GOM for its hospitality and noted that the warm reception and the discussions underlined the exceptionally close and friendly relations between the two neighbouring countries.^{xxxv}

Conclusion

A fundamental convergence existed between India's recognition of Myanmar's geo-strategic centrality and Myanmar's quest for an independent' fresh policy and a balance in its relations with neighbours and other major partners. Therefore, a whole set of factors that pushed the two countries towards a close and co-operative relationship would remain potent and unchanged, despite political changes that would occur in Myanmar, in the foreseeable future. Those in power in New Delhi and Naypyitaw were obliged to respect the realities and move towards building on the strong foundations, which had been laid in the past decade and half especially since 2011.

Looking ahead from this perspective, we may critically analyse the prospects concerning three major pillars of the relationship.²⁴ there were many uncertainties and some genuine concerns, but in looking at the Myanmar - China relationship, it was important not to overreact. As one noted Indian strategic analyst had written, "A degree of caution was warranted, but not undue alarm." This view had been echoed by other regional specialists. It was always easy to develop dramatic and worrying scenarios for the future but, given the paucity of accurate information and the many different ways the current situation could develop in the future, these need to be treated with caution. All analysts studying this question, however, seemed to agree that the China - Myanmar relationship had developed a life of its own and given other strategic developments, may come to grow beyond the power of either country to control. This would impact unpredictable results for the Indian Ocean region. For example, the strengthening of economic and other sanctions against the military junta in Myanmar by the Bush Administration, in response to the imprisonment of Aung San Suu Kyi, may had some unintended results. Faced with these measures and the unprecedented criticisms by other regional countries, the Rangoon regime turned even more towards China for diplomatic and economic support.²⁶ The embattled military government had also felt that it had no alternative, but to develop closer relations with fellow pariah States, like North Korea. For the primary consideration of the military regime in Rangoon was and would remain, the retention of political power and this would take precedence over any perceived impact on the wider strategic environment of the Indian Ocean region. To improve relations between two countries in the near future, the following steps must be taken:

The regions climatic and soil condition is suitable for growing variety of fruits and vegetables. Hence, stress must be given to develop agricultural and horticulture products on a commercial scale in the NE region of India. In the end both countries should overcome mutual suspicious and display a particle will to convert their ties into strategic partnership.

Reference

* Ton That Thien, *India and South East Asia: 1947-1960* (Geneva, 1963), p. 175

* *Burma*, n. 12, p. 51.

* Stephen P. Cohen (2001), *INDIA: Emerging Power*, Oxford University Press: New Delhi, p.253.

* K. M Panikar ., in *two china* , memoirs of a diplomat London 1965 ,p 66

* *The nation* 22 , 24 ,and 24 , 1951

* *Ibid.*, 25 October 1951

* *The time* 6 November 1961

* *The nations* 14 May 1953

* Jawaharlal Nehru ., *India's foreign policy* op.cit p 293 .

* *India news* 4 April 1953

* *The nation* 1 April 1953v

* Official records of the general assembly of united nations , first committee, 1952-53 vol. I pp 659

* *Ibid* p635

* *Un year book* 1954 pp 53-54

* *Ibid* pp 55-56

* *For Affects* K. M. T. *problem of Burma's foreign policy* refer to Robert H. Taylor, *foreign and domestic consequences of K.M.T intervention in Burma* , new York 1973 pp

* *Report, India ; 1955-56 India ministry of external affairs* , p9

* M.S. Rajan *India in world affairs ; 1954-56b, Bombay . 1964* p202

* *The Nation* 18, October 1955

* *Report, India ; 1955-56 India ministry of external affairs* , pp10-11

* *The nation* 26 January 1958

* Stephen P. Cohen (2001), *INDIA: Emerging Power*, Oxford University Press: New Delhi, p.253.

* John Bray (1995), Burma: the Politics of Constructive Engagement, Royal Institute of International Affairs: London, p.40

* Jürgen Haacke (2006), Myanmar's Foreign Policy: Domestic influence and international implications, Adelphi Paper 381, International Institute of Strategic Studies, London, p. 37.

* Subhash Kapila, India-Myanmar Strategic Partnership: Indian Imperatives, South Asian Analysis Group, Paper no. 197, <http://www.southasiananalysis.org/paper2/paper197.htm>.

* J.N. Dixit, "Road to Mandalay", Telegraph, 22 March 2006.

* Muni, S.D. (2009), India's Foreign Policy: The Democracy Dimension, Foundation books: New Delhi, p. 81

* Ministry of External Affairs, Government of India, Annual Reports 1992-93 and 1993-94.

* https://en.wikipedia.org/wiki/premiership_of_atal_bihari_vajpayee

1. L. A. Pandit. India's Foreign Policy in South Asia under UPA I and II: Issues and Concerns. World Focus, 34 (12) 2013: Pp 41-45.

* Ibid .

* Udai Bhanu Singh, An Assessment of Manmohan Singh's Visit to Myanmar Institute for Defence Studies and Analyses, New Delhi. June 01, 2012

* https://en.wikipedia.org/wiki/Indian_General_Election,_2014 Indian General Election, 2014 - Wikipedia, the Free

* www.mea.gov.in/index.htm

Solving real time sudoku with the help of computer vision and deep learning

Rajat & Rishabh Sharma*

Ms. Shalubashambu**

***Abstract:** Sudoku is a logic-based, combinatorial number-placement puzzle. The objective is to fill a 9×9 grid with digits so that each column, each row, and each of the nine 3×3 subgrids that compose the grid (also called "boxes", "blocks", or "regions") contains all of the digits from 1 to 9. The puzzle setter provides a partially completed grid, which for a well-posed puzzle has a single solution. The difficulty of the Sudoku is measured by the number of pre-provided elements at the start of the game. A Sudoku containing more numbers is considered easier than the one having less numbers.*

This paper aims at developing a cost-effective neural network based Sudoku solving program that identifies, recognises and understands an image to generate and solve a Sudoku. The project will automatically detect the problem and extract sudoku and interpret the value and solve and print the output. The underlying principle is the use of object detection by finding the largest contour using adaptive threshold and Image Recognition through neural networks and finally solving the problem using search algorithms like Backtracking. We have also shown that problem specific dataset is better than using general dataset, that is, MNIST

*B.Tech (I.T.) Students at Maharaja Agrasen Institute of Technology, Delhi

**Assistant Professor, B.Tech (I.T.) at Maharaja Agrasen Institute of Technology, Delhi

I. Introduction

Machine learning has been used for years to offer object detection, image recognition, spam detection, natural language processing, recommendation system and medical diagnosis. Today, machine learning algorithms can help us enhance cybersecurity, ensure public safety, and improve medical outcomes. With machine learning, we can solve a real-world problem but would not be too complicated to implement. Machine Learning is very much popular in gaming field also like Alpha-go which defeated the national GO champion was starting of a new era.

Sudoku is one of the most popular numbers game that we can play everyday. Sudoku is a numbers game which players have to fill each of the blank boxes in a puzzle based on specific rules. It can be one of the hardest and challenging puzzle to solve which all age group people love and help them level up their brain. Playing sudoku actually exercises your brain extensively. So machine learning enable computers to do things which human can do with superhuman accuracy.

Sudoku is a logic-based, combinatorial number-placement puzzle. The objective is to fill a 9×9 grid with digits so that each column, each row, and each of the nine 3×3 subgrids that compose the grid (also called "boxes", "blocks", or "regions") contains all of the digits from 1 to 9. The puzzle setter provides a partially completed grid, which for a well-posed puzzle has a single solution.

Rules of Sudoku

A general Sudoku has a 9 X 9 array of square boxes, of which some are pre-filled and others are empty. The scattered random presence and absence of numbers in the array makes the puzzle. A Sudoku is considered to be complete only when all the 81 boxes are completely filled while following the rule that no row or column and no 3 x 3 sub-block repeats of the digit from 1 to 9.

II. Dataset Used

MNIST

The MNIST database is a database with handwritten digits. It consists of 60,000 examples. It also contains a test set of 10,000 examples. Basically, MNIST dataset is a child of the large set called NIST. The digits are bit modified by size-normalisation and centered for a fixed-size image. MNIST is a good starting point for pattern recognition on practical data without spending too much time on preprocessing and formatting.

MNIST dataset was created from the bigger brother NIST dataset by normalising the original black and white images so that they can fit a 20x20 pixel box. This was done by keeping the aspect ratio constant. The images from the MNIST dataset contain grey levels because the normalisation algorithm uses anti-aliasing technique to improve quality. The centering of the images was done by computing the center of mass of the pixels and then these images were translated by keeping the center of mass as the middle of the 28x28 image field. The MNIST dataset also contains a Special Database-1 which has some binary handwritten images. The MNIST training set is composed of 30,000 patterns from SD-3 and 30,000 patterns from SD-1. SD-1 contains 58,527 digit images written by 500 different writers. In contrast to SD-3, where blocks of data from each writer appeared in sequence, the data in SD-1 is scrambled.

7	1	0	6	2	0	6	2
3	8	0	0	8	8	4	7
5	8	7	3	9	0	5	8
1	5	0	2	8	4	2	3
0	4	3	9	8	2	1	8
5	0	1	6	6	5	5	2
1	7	7	1	2	3	7	3
6	3	7	6	6	1	4	0

Figure 1: Sample writings from MNIST dataset

CUSTOM SUDOKU DATASET

The digits in the dataset were extracted from 28 different sudoku's using our extraction method which we have labelled manually. One hot vector of the labels was created so that they can be used directly in our Neural Net Model. Dataset consists of (28,28) size gray scale digits which is similar to a very popular handwritten digit classification dataset MNIST. We used small image size to reduce the computational complexity. Then all the images were flattened so that a single row with 784 pixels would represent a unique image.

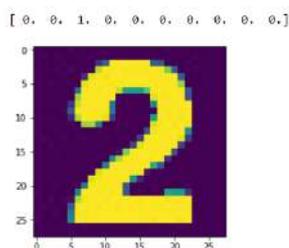


Figure 2 : Custom Dataset with label

There are total 1135 digits in the training dataset which are classified into 10 categories from 0-9, where 0 is for all those digits which are not extracted completely and 1-9 is used to represent the number. So the size of the label array will become (1135,10) which is the one hot vector represent of 10 categories and size of the training image is (1135,784).A validation data for validating our model was also created using 1 sudoku image. The validation data contained 28 unique digits which were classified similar to the training dataset. Then the complete dataset was stored as neural network dataset which was stored into a pickle file so that it could be used later for the training purpose. The format is a pickle which is essentially a file archive of a Python object.

III. Implementation

The custom image has to be identified from the extra surroundings of the image and then all the numbers need to be recognised so that the algorithm can solve them. This was done in the following ways.

Figure 3: Sample Input Sudoku



Preprocessing

Image preprocessing is done because we are working on a real time based image and the quality of image depends on the various factors like resolution, brightness, and sharpness. Real time image contains noise that can affect the working and accuracy of the model so we need to apply some preprocessing methods.

Preprocessing applied on the input image is:

- **Converting image into grayscale image**

Converting the image to grayscale helps in easy and fast reading of the image. With grayscale image the colour information is lost and each element simply be recognised by the change in brightness of the pixels.

- **Gaussian blur is applied**

The raw image obtained as input is full of noise and difficult to read for any computer. So the image is blurred using Gaussian Blur and the parts of the image get smoothed out for easy reading. Gaussian Blur reduced the complexity of the image significantly and helped in retaining only those elements which we were interested in.

- **Adaptive threshold**

Adaptive Thresholding converts the grayscale image to a binary image with just two colors black & white. This binary image was used to make the number and line recognition clear by a significant number.

- **Dilation**

The image obtained by Adaptive Thresholding is very clear to identify by human eyes but due to the multiple modifications of the image the numeral and line thickness gets affected and hence the resultant image gives poor results in number detection. So dilation was used to gain back the lost image thickness.

- **Finding all the contours in the image**

We assume that the image obtained by user has Sudoku as its prominent feature and based on this assumption the contour starts to recognise the Sudoku.

Get the largest contour in the image.

The assumption of Sudoku being the main part of the image helps in finding the outline of the Sudoku easily. This detection of the Sudoku is used to find the main outline of the Sudoku image.

- **Get the largest bounding rectangle within the contour**

We find the corners of the contour rectangle and convert those points to the X,Y coordinates of the image pixels.

- **Compute the grid corners using formulae**

We have transformed the image to just concentrate on the Sudoku of the image. By using the formula given in figure 4 we can isolate the Sudoku box from the rest of the image.

$$X = \frac{ax + by + c}{gx + hy + 1}$$
$$Y = \frac{dx + ey + f}{gx + hy + 1}$$

Figure 4: Perspective Transformation Equation

- **Fitting the image in the center using perspective**

Now the image is cut out of the dilated image by using the formula given in figure 4 and applying it to the coordinates obtained by largest contour detection. The image so obtained is the final Sudoku image without any noise or extra parts.

Digit isolation is done through various steps:

● **Probabilistic Hough Line Transform to find the location of all grid lines**

Cells of the image are detected by simple probability method as the image obtained after extra part cutting and noise reduction is almost straight and simply dividing the image into 9x9 squares can help easily detect the Sudoku cells.

● **Extract the largest connected component in the image**

Now, the position of the pre available numbers is detected by observing the pixel brightness pattern in each of the small contours of the grid. The cells with varying pixel brightness are treated to be filled with data while the rest are treated to be empty. This process is made more efficient by giving priority to the center part of each contour.

● **Removing all major noise in the cell**

All the major contours of the image are detected and a new 9x9 grid is created showing the position of probable numbers and all the empty cells are treated with digit zero "0" in the new grid.

New 9 by 9 grids are created with the image cell detected and shifting the digit towards the center and with the cell size 28 X 28.

Detecting, interpretation

Now the main task was to detect the digit and then predict what it is. For this we trained our deep neural net using Convolution Neural Net on our custom Sudoku image dataset which is a collection of Sudoku digits of size (28,28).

● **Model designing**

A Convolutional neural network model is designed with 2 convolution blocks which is then feed into 2 dense for generating resultant one hot vector of 10,1 size as output.

● **Neural net arc**

Model includes the following layer.

Layer (type)	Output Shape	Param #
conv2d_3 (Conv2D)	(None, 26, 26, 32)	320
max_pooling2d_3 (MaxPooling2)	(None, 13, 13, 32)	0
conv2d_4 (Conv2D)	(None, 11, 11, 64)	18496
max_pooling2d_4 (MaxPooling2)	(None, 5, 5, 64)	0
dropout_3 (Dropout)	(None, 5, 5, 64)	0
flatten_2 (Flatten)	(None, 1600)	0
dense_3 (Dense)	(None, 1024)	1639424
dropout_4 (Dropout)	(None, 1024)	0
dense_4 (Dense)	(None, 10)	10250
Total params: 1,668,490		
Trainable params: 1,668,490		
Non-trainable params: 0		

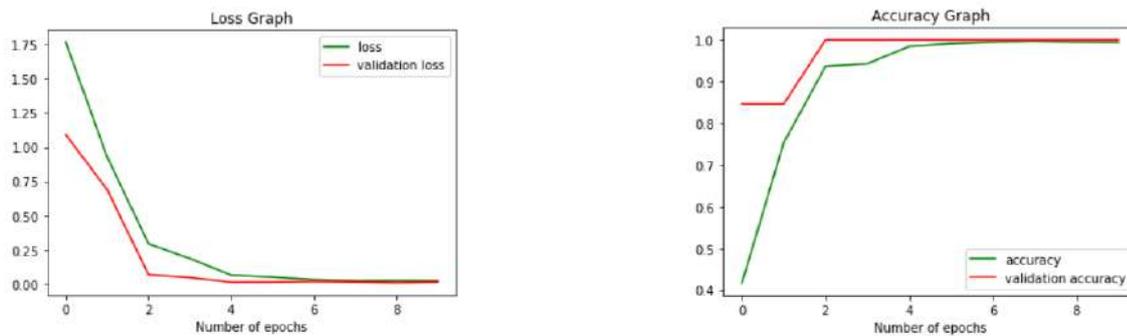
Figure 5

Model is compiled with categorical cross entropy as a loss function for multi classification with Adadelta as optimizer.

● **Using sudoku dataset**

Model is trained on 1135 images of 28,28 size grayscale images as input data and 28 images are used as validation data with a batch size equal to 128.

Figure 6



Accuracy obtained on the validation data after 10 epochs 100% with 99.3% as training accuracy

● **Using mnist**

Model is trained on 60,000 images of handwritten digit of 28,28 size grayscale images as input data and 10,000 images are used as validation data with a batch size equal to 128.

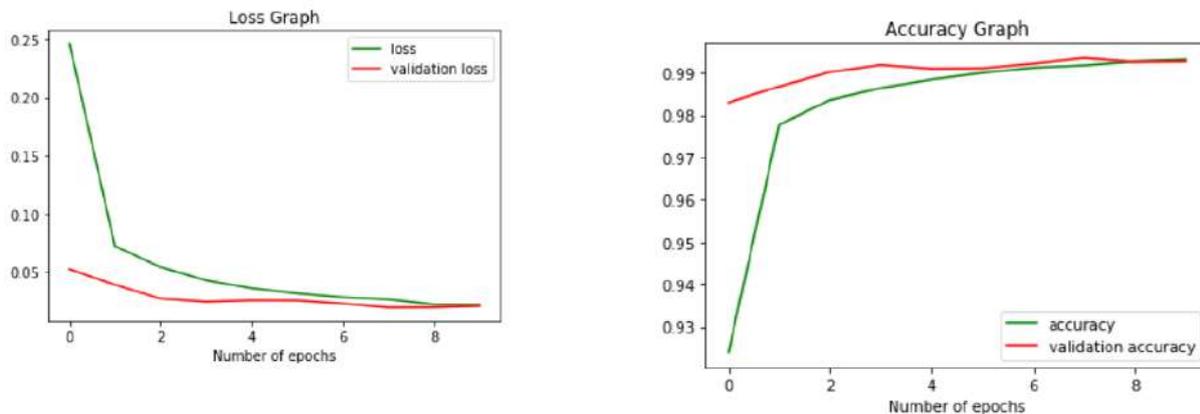


Figure 7

Accuracy obtained on the validation data after 10 epochs 99.2% with 99.3% as training accuracy

Solving Sudoku

Backtracking

We built a solution step by step using recursion; if during the process we realised that was not going to be a valid solution, then we stopped computing that solution and returned back to the step before In Sudoku backtracking was implemented in the manner that the program fills the first empty position with some number and tries to solve the whole sudoku step by step making assumptions wherever necessary and fits numbers in the matrix while following basic Sudoku rules. In case the program reaches a dead end where no possible number is able to fit in the empty box, the program retaliates back a step to the last

assumption and invalidates that assumption to make a new one and pursues to solve with the new solution. This process is repeated unless and until all the boxes in Sudoku are completely filled. This stage of complete fulfillment of all the boxes is considered to be our final solution.

Rules for easy and then extra rules for hard sudoku

Implementing Backtracking algorithm directly can solve most of the puzzles easily. But to save time and computational power we set some rules that helped us solve the Sudoku even better.

“If a unit has only one possible place for a given digit, it must be that digit.”

This rule is applicable on all the Sudoku sets and was used in the whole algorithm. But to solve some hard Sudokus we needed to add some extra rules which helped in making the algorithm better. These rules are

“If there are no remaining possibilities for a cell, the board is invalid.

If there are no possible positions for a digit in a unit, the board is invalid.”

These rules helped in additional fast pacing of the program and made it better. For testing of the above rules a Sudoku intentionally made difficult for Brute-Force implementation was selected. The application of these rules solved a worst case puzzle in just 0.01 seconds.

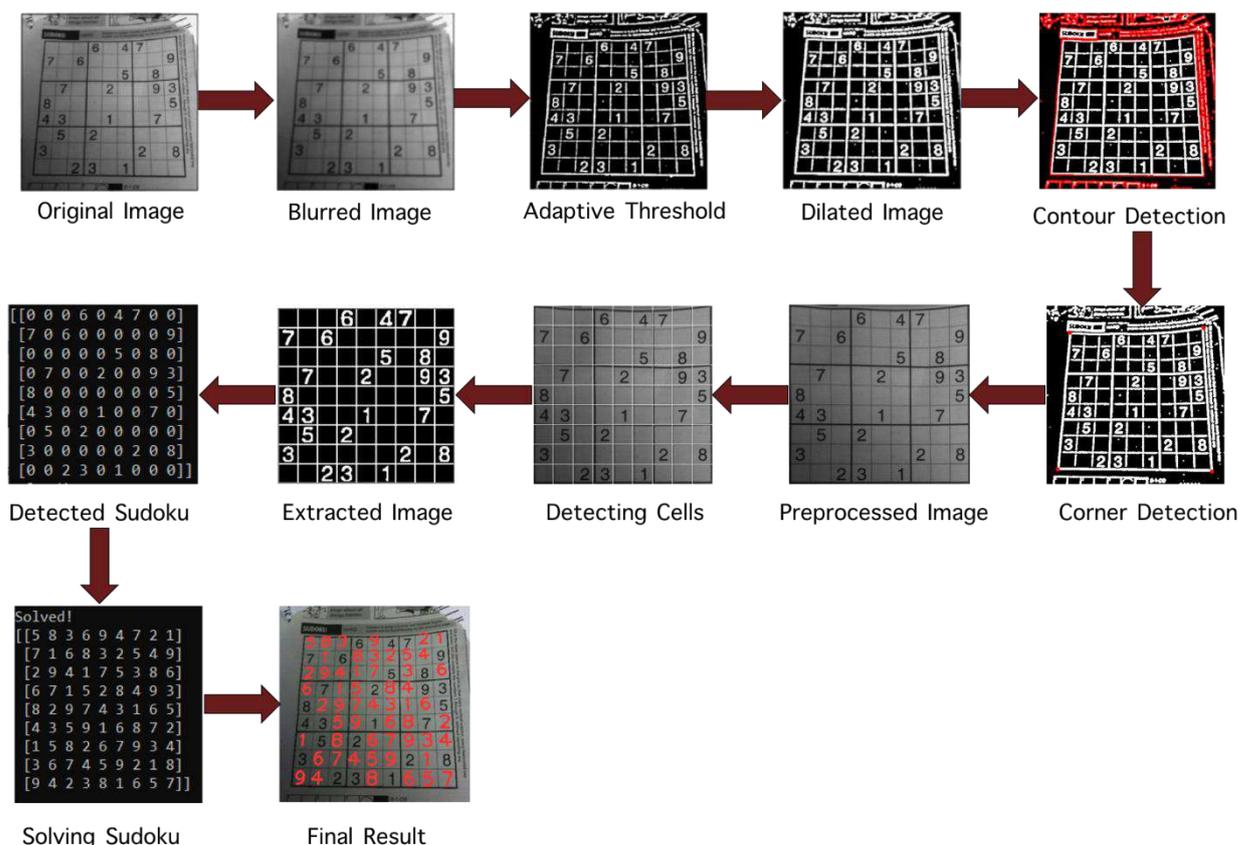


Figure 8

IV. Results

Sudoku is extracted using a convolutional model trained on 2 different datasets.

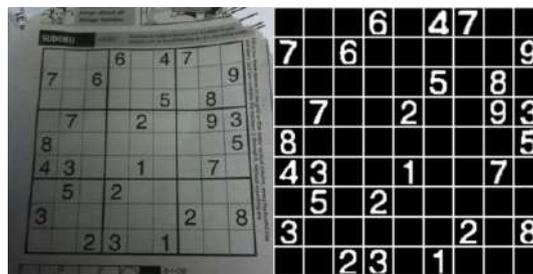


Figure 9

Using Mnist

The accuracy obtained on this model on 20 test images is 35%.

Complete Puzzle2Arr	Not Solvable
[0 0 0 5 0 0 7 0 0]	[0 0 0 5 0 0 7 0 0]
[2 0 6 0 0 0 0 0 9]	[2 0 6 0 0 0 0 0 9]
[0 0 0 0 0 5 0 8 0]	[0 0 0 0 0 5 0 8 0]
[0 7 0 0 2 0 0 9 3]	[0 7 0 0 2 0 0 9 3]
[8 0 0 0 0 0 0 0 5]	[8 0 0 0 0 0 0 0 5]
[4 3 0 0 7 0 0 7 0]	[4 3 0 0 7 0 0 7 0]
[0 5 0 2 0 0 0 0 0]	[0 5 0 2 0 0 0 0 0]
[3 0 0 0 0 0 2 0 8]	[3 0 0 0 0 0 2 0 8]
[0 0 2 3 0 7 0 0 0]	[0 0 2 3 0 7 0 0 0]

Figure 10

Using Custom Sudoku dataset

The accuracy obtained on this model on 20 test images is 80%

Complete Puzzle2Arr	Solved!
[0 0 0 6 0 4 7 0 0]	[5 8 3 6 9 4 7 2 1]
[7 0 6 0 0 0 0 0 9]	[7 1 6 8 3 2 5 4 9]
[0 0 0 0 0 5 0 8 0]	[2 9 4 1 7 5 3 8 6]
[0 7 0 0 2 0 0 9 3]	[6 7 1 5 2 8 4 9 3]
[8 0 0 0 0 0 0 0 5]	[8 2 9 7 4 3 1 6 5]
[4 3 0 0 1 0 0 7 0]	[4 3 5 9 1 6 8 7 2]
[0 5 0 2 0 0 0 0 0]	[1 5 8 2 6 7 9 3 4]
[3 0 0 0 0 0 2 0 8]	[3 6 7 4 5 9 2 1 8]
[0 0 2 3 0 1 0 0 0]	[9 4 2 3 8 1 6 5 7]

Figure 11

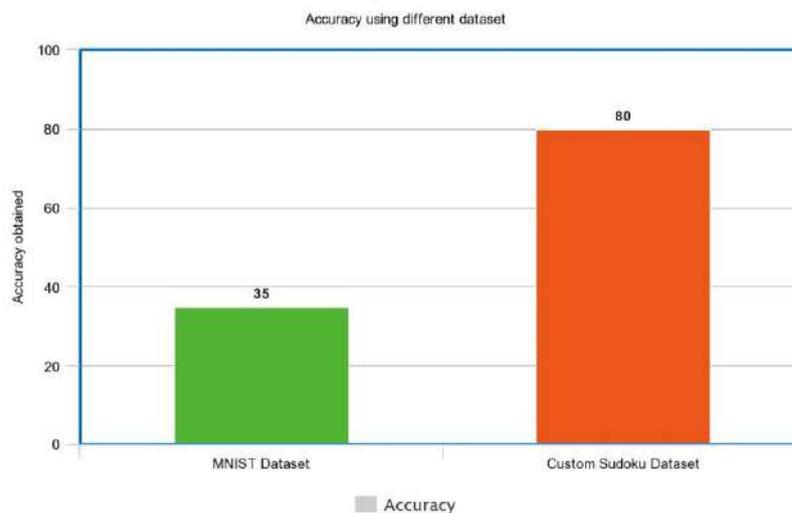


Figure 12

V. Conclusion

From the result obtained we can say that preprocessing is required for working with real time images and it's better to use problem related custom dataset rather than using general dataset like for predicting digits using MNIST dataset with which we achieved only 35% accuracy with a model trained on 70k images whereas with custom dataset using small number of images i.e. 1263 images only we got 80% accuracy with same deep learning model.

VI. Reference

- [1] *Investigation on the Effect of a Gaussian Blur in Image Filtering and Segmentation* by Estevão S. Gedraite, Murielle Hadad
https://www.researchgate.net/publication/261278360_Investigation_on_the_effect_of_a_Gaussian_Blur_in_image_filtering_and_segmentation
- [2] *Gaussian Blurring-Deblurring for Improved Image Compression* Moi Hoon Yap¹, Michel Bister², Hong Tat Ewe¹ Multimedia University (MMU)
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.375.9085&rep=rep1&type=pdf>
- [3] *Adaptive Thresholding: A comparative study* by Payel Roy, Saurab Dutta, Nilanjan Dey, Goutami Dey, Sayan Chakraborty, Ruben Ray
https://www.researchgate.net/publication/269984781_Adaptive_thresholding_A_comparative_study
- [4] *A CONVENTIONAL STUDY OF EDGE DETECTION TECHNIQUE IN DIGITAL IMAGE PROCESSING* by Indrajeet Kumar, Jyoti Rawat, Dr. H.S. Bhadauria <https://www.ijcsmc.com/docs/papers/April2014/V3I4201497.pdf>
- [5] *Developing the Theory of Perspective Transformation: Continuity, Intersubjectivity, and Emancipatory Praxis*
<https://journals.sagepub.com/doi/pdf/10.1177/0741713616674076>
- [6] *Progressive Probabilistic Hough Transform* by J. Matas, C. Galambos and J. Kittler
<https://arxiv.org/pdf/1502.02160.pdf>

Attitude Of Parents And Teachers Towards The Introduction Of Equitable Education By Tamil Nadu Government

Dr. V. THAMODHARAN*

Abstract

Education is a dynamic process which in its totality changes with the changing situations and developing circumstances. The only purpose of education is to teach a student how it lives his life –by developing his mind and equipping him to deal with reality. Equity is the state or condition of being fair, the idea that all individuals should be treated according to their needs and merits. In education, it is connected to the idea that the student's needs and abilities should be taken into account in designing educational programmes. The term refers to the fairness of education and whether or not all participating stake holders – male, female and various population groups – receive the same benefits. The investigator has used random sampling technique for selecting the sample for investigation. The investigator randomly selected 905 teachers and 600 parents of students who are studying through teaching equitable education in the schools by Tamil Nadu government in Kanyakumari district. The two tools used for the present study were developed by the investigator. The first tool and the second tool consist of five point scale with five dimensions consisting of 20 items in each dimension. For analyzing the data, the investigator has used mean, standard Deviation, Percentage Analysis, Test of Significance (t-Test), F-test (ANOVA), Scheffe's Test. The findings showed that there is significant difference among the mean scores of different dimensions of attitude of parents and teachers towards the introduction of equitable education with respect to the educational qualification and type of school.

Keywords: *Equity, Educational Programmes.*

Introduction

Education is the natural, harmonious and progressive development of man's innate powers. It helps in the development of the personality of an individual in his physical, intellectual, aesthetic, social, economic, religious, cultural, spiritual and through such development individual and social needs can be realized. The concept of equity in education can be achieved by pursuing the policy of protective discrimination in favour of the disadvantaged section of the society. In this sense, most of the developing countries of the world

*Principal (Rtd), V.O.C. College of Education, Thoothukudi

including India have set equity as a major goal of educational policy. At the centre of our society, one treasures the collective strength of educating children together. The last provincial election turned on the question of public education. The premier strives to be seen as the education premier new investments renewed energies are being poured into the system. One improves our treasured system with optimism and urgency. One constantly works to make it first class. One treasures the work of our teachers. One treasure the promise of education the way its expand horizons for generations. One celebrates and works to ensure equity. At the centre of our search for an equitable society is the principle of fee basic education. In order to ensure equitable education our government has taken several measures.

Need and significance of the study

Equitable education provides equal standard of education for everyone. In our country there are different kinds of educational systems like Matriculation, State board, Anglo-Indian and Oriental schools. The heterogeneous group of students learning in these heterogeneous kinds of schools gain heterogeneous knowledge, experience and education. This makes a lot of differences and inequality in educational standard. So for this there lies the solution and it is equitable education. Much talk about equity in education is about having equal facilities and equal resources. Those factors, although extremely important, do not create an equal education by themselves. Most of the research shows that mind-sets, the beliefs of people such as administrators, teachers, parents and students have also impact a student's achievement. So the researcher has taken the study of attitude of parents and teachers towards the introduction of equitable education by Tamil Nadu government.

Definition of the terms

Attitude

Attitude presents individual feelings for or against something. In other words the degree of feeling of favorableness or un-favorableness towards some object, person, groups, institution, and ideas is called attitude.

Equitable Education

Equitable Education also referred to as equity in education, is a measure of achievement, fairness, and opportunity in education. The study of education equity is often linked with the study of excellence and equity. Educational equity is dependent on two main factors. The first is fairness, which implies that factors specific to one's personal conditions should not interfere with the potential of academic success. The second important factor is inclusion, which refers to a comprehensive standard that applies to everyone in a certain education system.

Parents and Teachers

Parents and Teachers are those who are the parents of school students and those who are the teachers of elementary schools by Tamil Nadu government in Kanyakumari district.

Objectives

1. There is no significant association between the levels of attitude of parents towards the introduction of equitable education by Tamil Nadu government and the demographic variables such as gender, locality, age, caste, religion, educational qualification, occupation, annual income and resident place of educational district.
2. There is no significant difference between the mean scores of different dimensions of attitude of parents towards the introduction of equitable education such as

infrastructure, problem solving ability, discipline, academic achievement and vocational skills, and in total with respect to educational qualification.

3. There is no significant association between the levels of attitude of teachers towards the introduction of equitable education by Tamil Nadu government and the demographic variables such as gender, age, caste, religion, type of school, management, medium of instruction, category of teaching, monthly income, experience, marital status and teaching educational district.
4. There is no significant difference among the mean scores of different dimensions of attitude of teachers towards the introduction of equitable education such as professional autonomy, culture and social capital, self-confidence, think systematically, all round development and in total with respect to type of school.

Method and Procedure

In the present study, the investigator has chosen survey method for analyzing the attitude of parent and the attitude of teachers towards the introduction of equitable education in the study area. Survey is a procedure in which data are systematically collected from a population through some direct solicitations such as face to face interview, questionnaire or observation schedule etc. The investigator selected 600 parents and 905 teachers in the educational districts of Kanyakumari district of Tamil Nadu by simple random sampling technique. The two tools used for the present study were developed by the investigator. The first tool and the second tool consist of five point scale with five dimensions consisting of 20 items in each dimension. For analyzing the data, the investigator has used mean, standard Deviation, Percentage Analysis, Test of Significance (t-Test), F-test (ANOVA), Scheffe's Test.

Analysis and findings

Null hypothesis -1

Levels of Attitude of Parents towards the Introduction of Equitable Education and the Demographic Variables

Demographic Variable	Level of Attitude			Total	df	Chi-Square Value	
	Low	Medium	High			Calc.	Table
Gender	Male	46	118	96	2	30.94*	5.99
	Female	131	111	98			
Locality	Rural	157	132	71	2	105.55*	5.99
	Urban	20	97	123			
Age (Years)	Up to 35	69	82	59	4	37.16*	9.49
	36-45	73	88	64			
	Above 45	35	59	71			
Caste	OC	15	35	10	6	209.90*	12.60
	BC	117	115	68			
	MBC	20	30	60			
	SC	20	44	66			
Religion	Hindu	59	70	51	4	96.81*	9.49
	Christian	108	141	111			
	Muslim	10	18	32			
Educational Qualification	SSLC	29	36	25	6	14.13*	12.60
	Hr.Secondary	50	57	43			
	UG Level	38	48	34			
	PG Level	60	88	92			
Occupation	Coolie	30	36	24	4	32.14*	9.49
	Govt.	97	119	84			

	Private	50	74	86	210			
Annual Income	Up to 50000	59	70	51	180	4	90.37*	9.49
	50001-75000	98	117	85	300			
	Above 75000	20	42	58	120			
Educational District	Nagercoil	85	71	34	190	4	132.19*	9.49
	Thuckalay	62	53	65	180			
	Kuzhithurai	30	105	95	230			
Total Level of Attitude		177	229	194	600			
		20.50%	38.17%	32.33%	100%			

*Significant at 0.05 level

The above table reveals that 29.50% have low level, 38.17% have medium level and 32.33% have high level of attitude of parents towards the introduction of equitable education. It reveals that the level of attitude of parents towards the introduction of equitable education by government of Tamil Nadu is moderate.

The above table also shows that all the calculated values of chi-square values are greater than the table value at 0.05 level of significance and hence, the null hypothesis, "There is no significant association between the levels of attitude of parents towards the introduction of equitable education by Tamil Nadu government and the demographic variables such as gender, locality, age, caste, religion, educational qualification, occupation, annual income and resident place of educational district" is rejected.

It is concluded that levels of attitude of parents towards the introduction of equitable education by Tamil Nadu government are depending upon the demographic variables such as gender, locality, age, caste, religion, educational qualification, occupation, annual income and resident place of educational district.

Null hypothesis-2

Analysis of Variance among the Mean Scores of Attitude of Parents towards the Introduction of Equitable Education in Different Dimensions and in Total with respect to Educational Qualification (SSLC, Higher Secondary, UG Level and PG Level)

Dimensions of Attitude of Parents towards the introduction of Equitable Education	Source of Variance	Sum of Squares	df	Mean of Squares	F-value
Infrastructure	Between	67.2043	3	22.4014	3.3389*
	Within	3998.6680	596	6.7092	
Problem solving ability	Between	66.5365	3	22.1788	3.3962*
	Within	3892.1857	596	6.5305	
Discipline	Between	88.7943	3	19.5981	3.0390*
	Within	3843.4492	596	6.4487	
Academic Achievement	Between	59.3651	3	19.7884	3.0471*
	Within	3870.5130	596	6.4941	
Vocational Skills	Between	77.9416	3	25.9805	3.9292*
	Within	3940.8445	596	6.6172	
Total Attitude	Between	1566.2696	3	522.0899	3.3842*
	Within	91946.3472	596	154.2724	

Table value required for df 3,596 is 2.620 at 0.05 level.

*significant at 0.05 level.

The above table reveals that the calculated 'F' values are greater than the table value 3.010 with degrees of freedom 3, 596 at 0.05 level of significance in the different dimensions of attitude of parents towards the introduction of equitable education – infrastructure, problem

solving ability, discipline, academic achievement and vocational skills and in total with respect to educational qualification. Hence the null hypothesis, “There is no significant difference among the mean scores of different dimensions of attitude of parents towards the introduction of equitable education such as infrastructure, problem solving ability, discipline, academic achievement and vocational skills, and in total with respect to educational qualification” is rejected.

The above table also reveals that there is significant difference among the mean scores of different dimensions of attitude of parents towards the introduction equitable education such as infrastructure, problem solving ability, discipline, academic achievement and vocational skills, and in total with respect to educational qualification. So, Scheffe’s tests were applied and presented.

Scheffe’s Test for the Mean Scores of Attitude of Parents towards the Introduction of Equitable Education in Different Dimensions and in Total with respect to Educational Qualification

Dimensions of Attitude of Parents towards the introduction of Equitable Education	Educational Qualifications				Mean of Difference	C.I. Value	Result at 5% level
	SSLC	Hr. Secondary	UG Level	PG Level			
Infrastructure	75.122	75.673			0.551	0.968	NS
	75.122		76.375		1.253	1.013	S
	75.122			77.696	2.574	0.898	S
		75.673	76.375		0.702	0.889	NS
		75.673		77.696	2.023	0.756	S
		76.375	77.696	1.321	0.812	S	
Problem solving ability	82.989	83.933			0.944	0.955	NS
	82.989		84.033		1.044	0.999	S
	82.989			85.629	2.640	0.886	S
		83.933	84.033		0.100	0.877	NS
		83.933		85.629	1.696	0.746	S
		84.033	85.629	1.596	0.801	S	
Discipline	79.000	79.620			0.620	0.949	NS
	79.000		80.033		1.033	0.993	S
	79.000			81.575	2.575	0.880	S
		79.620	80.033		0.413	0.872	NS
		79.620		81.575	1.955	0.741	S
		80.033	81.575	1.542	0.796	S	
Academic Achievement	71.100	71.727			0.627	0.953	NS
	71.100		72.558		1.458	0.996	S
	71.100			73.933	2.833	0.883	S
		71.727	72.558		0.832	0.875	NS
		71.727		73.933	2.207	0.744	S
		72.558	73.933	1.375	0.799	S	
Vocational Skills	67.089	68.007			0.918	0.961	NS
	67.089		68.142		1.053	1.005	S
	67.089			68.913	1.824	0.891	S
		68.007	68.142		0.135	0.883	NS
		68.007		68.913	0.906	0.750	S
		68.142	68.913	0.771	0.806	NS	
Total Attitude	375.300	378.960			3.660	4.925	NS
	375.300		381.142		5.842	5.589	S

	375.300	378.960		387.746	12.446	5.435	S
		378.960	381.142		2.182	3.881	NS
				387.746	8.786	3.656	S
			381.142	387.746	6.604	4.511	S

Infrastructure

The above table reveals that the parents having educational qualification SSLC level and UG level; SSLC level and PG level; Higher secondary level and PG level; and UG level and PG level differ significantly in the dimension – Infrastructure of attitude towards the introduction of equitable education. It is also inferred that parents having educational qualification PG level have higher attitude than that of the parents having educational qualification SSLC level, Higher secondary level and UG level in the dimension – Infrastructure towards the introduction of equitable education.

Problem Solving Ability

The above table reveals that the parents having educational qualification SSLC level and UG level; SSLC level and PG level; Higher secondary level and PG level; and UG level and PG level differ significantly in the dimension – Problems solving ability of attitude towards the introduction of equitable education. It is also inferred that parents having educational qualification PG level have higher attitude than that of the parents having educational qualification SSLC level, Higher secondary level and UG level in the dimension – Problem solving ability towards the introduction of equitable education.

Discipline The above table reveals that the parents having educational qualification SSLC level and UG level; SSLC level and PG level; Higher secondary level and PG level; and UG level and PG level differ significantly in the dimension – Discipline of attitude towards the introduction of equitable education. It is also inferred that parents having educational qualification PG level have higher attitude than that of the parents having educational qualification SSLC level, Higher secondary level and UG level in the dimension – Discipline towards the introduction of equitable education.

Academic Achievement

The above table reveals that the parents having educational qualification SSLC level and UG level; SSLC level and PG level; Higher secondary level and PG level; and UG level and PG level differ significantly in the dimension – Academic achievement of attitude towards the introduction of equitable education. It is also inferred that parents having educational qualification PG level have higher attitude than that of the parents having educational qualification SSLC level, Higher secondary level and UG level in the dimension – Academic achievement towards the introduction of equitable education.

Vocational Skills

The above table reveals that the parents having educational qualification SSLC level and UG level; SSLC level and PG level; and Higher secondary level and PG level differ significantly in the dimension – Vocational skills of attitude towards the introduction of equitable education. It is also inferred that parents belong having educational qualification PG level have higher attitude than that of the parents having educational qualification SSLC level, Higher secondary level and UG level in the dimension – Vocational skills towards the introduction of equitable education. Total Attitude The above table reveals that the parents having educational qualification SSLC level and UG level; SSLC level and PG level; Higher secondary level and PG level; and UG level and PG level differ significantly in attitude towards the introduction of equitable education. It is also inferred that parents belong having educational qualification PG level have higher attitude than that of the

parents having educational qualification SSLC level, Higher secondary level and UG level towards the introduction of equitable education.

Null Hypothesis-3

Levels of Attitude of Teachers towards the Introduction of Equitable Education and the Demographic Variables

Demographic Variable		Level of Attitude			Total	df	Chi-Square Value	
		Low	Medium	High			Calc.	Table
Gender	Male	53	134	73	260	2	10.43*	5.99
	Female	200	292	153	645			
Age (Years)	Up to 25	136	226	140	502	6	30.05*	12.60
	26-35	54	93	44	191			
	36 – 45	38	44	27	109			
	Above 45	25	63	15	103			
Caste	OC	13	55	35	103	6	112.97*	12.60
	BC	171	208	117	496			
	MBC	31	102	63	196			
	SC	38	61	11	110			
Religion	Hindu	48	162	63	273	4	232.41*	9.49
	Christian	158	244	140	542			
	Muslim	47	20	23	90			
Type of School	Boys	90	113	37	240	4	65.74*	9.49
	Girls	67	64	59	190			
	Co-Education	96	249	130	475			
Management	Govt.	89	148	28	265	4	865.52*	9.49
	Govt. Aided	147	99	119	365			
	Private	17	179	79	275			
Medium of Instruction	Tamil	135	177	73	385	2	21.98*	5.99
	English	118	249	153	520			
Category of Teaching	Secondary	109	270	129	508	4	325.76*	9.49
	BT Teachers	39	122	65	226			
	PG Teachers	105	34	32	171			
Monthly Income	Upto 20000	209	316	116	641	4	165.00*	9.49
	20000	28	85	48	161			
	Above	16	25	62	103			
Experience	Upto 10	195	217	154	566	4	40.46*	9.49
	11-20 years	26	105	42	173			
	Above 20	32	104	30	166			
Marital Status	Married	209	251	116	576	2	58.25*	5.99
	Unmarried	44	175	110	329			
Educational District	Nagercoil	110	150	20	110	4	95.51*	9.49
	Thuckalay	84	136	90	84			
	Kuzhithurai	59	140	116	59			
Total Level of Attitude		253	426	226	905			
		27.96%	47.07%	24.97%	100.0			

*Significant at 0.05 level

The above table reveals that 27.96% have low level, 47.07% have medium level and 24.97% have high level of attitude of teachers towards the introduction of equitable education. It reveals that the level of attitude of teachers towards the introduction of equitable education by government of Tamil Nadu is moderate.

The above table also shows that all the calculated values of chi-square values are greater than the table value at 0.05 level of significance and hence, the null hypothesis, “There is no significant association between the level of attitude of teachers towards the introduction

of equitable education by Tamil Nadu government and the demographic variables such as gender, age, caste, religion, type of school, management, medium of instruction, category of teaching, monthly income, experience, marital status and teaching educational district” is rejected.

It is concluded that level of attitude of teachers towards the introduction of equitable education by Tamil Nadu government depends upon the demographic variables such as gender, age, caste, religion, type of school, management, medium of instruction, category of teaching, monthly income, experience, marital status and teaching educational district.

Null Hypothesis-4

Analysis of Variance among the Mean Scores of Attitude of Teachers towards the Introduction of Equitable Education in Different Dimensions and in Total with respect to Type of School

(Boys’ School, Girls’ School and Co-education School)

Dimensions of Attitude of Parents towards the introduction of Equitable Education	Source of Variance	Sum of Squares	df	Mean of Squares	F-value
Professional Autonomy	Between	107.9257	2	53.9629	6.0942*
	Within	7987.0736	902	8.8548	
Culture and social capital	Between	213.1896	2	106.5948	10.2779*
	Within	9354.8794	902	10.3713	
Self confidence	Between	158.0781	2	79.0391	8.3254*
	Within	8563.3372	902	9.4937	
Think systematically	Between	190.1376	2	95.0688	8.8185*
	Within	9724.1258	902	10.7806	
All round development	Between	142.0112	2	71.0056	7.8989*
	Within	8108.3929	902	8.9893	
Total Attitude	Between	3994.0354	2	1997.0177	9.1575*
	Within	196702.357	902	218.0736	

Table value required for df 2,902 is 3.00 at 0.05 level

*significant at 0.05 level.

The above table reveals that the calculated ‘F’ values are greater than the table value 3.010 with degrees of freedom 2, 902 at 0.05 level of significance in the different dimensions of attitude of teachers towards the introduction of equitable education – professional autonomy, culture and social capital, self-confidence, think systematically, all round development and in total with respect to type of school. Hence the null hypothesis, “There is no significant difference among the mean scores of different dimensions of attitude of teachers towards the introduction of equitable education such as professional autonomy, culture and social capital, self-confidence, think systematically, all round development and in total with respect to type of school” is rejected.

The above table also reveals that there is significant difference among the mean scores of different dimensions of attitude of teachers towards the introduction equitable education such as professional autonomy, culture and social capital, self confidence, think systematically, all round development and in total with respect to type of school. So, Scheffe’s tests were applied and presented in table 4.28.

Scheffe’s Test for the Mean Scores of Attitude of Teachers towards the Introduction of Equitable Education in Different Dimensions and in Total with respect to Type of School

Dimensions of Attitude of Parents towards the introduction of Equitable Education	Type of school			Mean of Difference	C.I Value	Result at 5% level
	Boys' school	Girls' school	Co-Education			
Professional Autonomy	81.283	81.974		0.690	0.708	NS
	81.283		83.506	2.223	0.577	S
		81.974	83.506	1.533	0.626	S
Culture and social capital	71.525	71.695		0.170	0.766	NS
	71.525		72.505	0.980	0.625	S
		71.695	72.505	0.811	0.677	S
Self confidence	79.233	79.005		0.228	0.733	NS
	79.233		80.622	1.389	0.598	S
		79.005	80.622	1.617	0.648	S
Think systematically	75.371	75.500		0.129	0.781	NS
	75.371		76.284	0.913	0.637	S
		75.500	76.284	0.784	0.690	S
All round development	85.263	85.447		0.185	0.713	NS
	85.263		86.080	0.817	0.582	S
		85.447	86.080	0.633	0.630	S
Total Attitude	392.675	393.621		0.946	3.513	NS
	392.675		396.998	4.323	2.865	S
		393.621	396.998	3.377	3.105	S

Professional Autonomy

The above table reveals that the teachers working in Boys' school and Coeducation school; and Girls' school and Co-education school differ significantly in the dimension – Professional autonomy of attitude towards the introduction of equitable education. It is also inferred that teachers working in Co-education school have higher attitude than that of the teachers working in Boys' school and Girls' school in the dimension – Professional autonomy towards the introduction of equitable education.

Cultural and Social Capital

The above table reveals that the teachers working in Boys' school and Coeducation school; and Girls' school and Co-education school differ significantly in the dimension – Cultural and social capital of attitude towards the introduction of equitable education. It is also inferred that teachers working in Co-education school have higher attitude than that of the teachers working in Boys' school and Girls' school in the dimension – Cultural and social capital towards the introduction of equitable education.

Self-confidence

The above table reveals that the teachers working in Boys' school and Coeducation school; and Girls' school and Co-education school differ significantly in the dimension – Self-confidence of attitude towards the introduction of equitable education. It is also inferred that teachers working in Co-education school have higher attitude than that of the teachers working in Boys' school and Girls' school in the dimension – Self-confidence towards the introduction of equitable education.

Think Systematically

The above table reveals that the teachers working in Boys' school and Coeducation school; and Girls' school and Co-education school differ significantly in the dimension – Think systematically of attitude towards the introduction of equitable education. It is also inferred

that teachers working in Co-education school have higher attitude than that of the teachers working in Boys' school and Girls' school in the dimension – Think systematically towards the introduction of equitable education.

All Round Development

The above table reveals that the teachers working in Boys' school and Coeducation school; and Girls' school and Co-education school differ significantly in the dimension – All round development of attitude towards the introduction of equitable education. It is also inferred that teachers working in Co-education school have higher attitude than that of the teachers working in Boys' school and Girls' school in the dimension – All round development towards the introduction of equitable education.

Total Attitude

The above table reveals that the teachers working in Boys' school and Coeducation school; and Girls' school and Co-education school differ significantly in the attitude towards the introduction of equitable education. It is also inferred that teachers working in Co-education school have higher attitude than that of the teachers working in Boys' school and Girls' school towards the introduction of equitable education.

Conclusion

It is concluded that there is significant association between the levels of attitude of parents towards the introduction of equitable education by Tamil Nadu government and the demographic variables such as gender, locality, age, caste, religion, educational qualification, occupation, annual income and residing educational district. There is significant difference among the mean scores of different dimensions of attitude of parents towards the introduction of equitable education such as infrastructure, problem solving ability, discipline, academic achievement and vocational skills, and in total with respect to educational qualification. There is significant association between the levels of attitude of teachers towards the introduction of equitable education by Tamil Nadu government and the demographic variables such as gender, age, caste, religion, type of school, management, medium of instruction, category of teaching, monthly income, experience, marital status and teaching educational district. There is significant difference among the mean scores of different dimensions of attitude of teachers towards the introduction of equitable education such as professional autonomy, culture and social capital, self-confidence, think systematically, all round development and in total with respect to type of school. So the investigator opines that one of the most efficient educational strategies for governments is to invest early and all the way up to upper secondary. Governments can prevent school failure and reduce dropout using two parallel approaches: eliminating education policies and practices that hinder equity; and targeting low performing disadvantaged schools. But education policies need to be aligned with other government policies, such as housing or welfare, to ensure student success. The quality of education is not only with the quality of syllabus, but also about good educational environment, infrastructure, and quality teachers. The uniform education in Tamilnadu got its final shape after getting the view of eminent educationists. In addition to these, few matriculation private schools may teach some additional subjects like Hindi, French, German, etc. Uniform education doesn't mean to restrict one's pace in 249 the field of education; its only aim is to maintain standard and quality in education. Thus, all the schools have to work hand in hand in achieving this laudable attainment. Different emphases laid in the

four systems of school education need to be unified to lay a firm foundation for further education, successful careers and multi-faceted life.

Reference

1. **Agarwal Y.P (1988)**.Statistical Methods. New Delhi: Sterling Publishers Pvt. Ltd.
2. **Agarwal, J. C, (2003)** Basic Ideas in Education. New Delhi:Shipra Publications.
3. **Allport, G.W., (1935)** “Attitudes” in C. Murchinson (Ed). Handbook of SocialPsychology, Worlster, Mass: Clark University Press.
4. **Best W. John. (2006)**.Research in Education. New Delhi: Prentice Hall of India.
5. **Chauhan S.S (2007)**.Advanced Educational psychology.New Delhi: Vikas PublishingHouse Pvt Ltd
6. **George A.Ferguson (1981)**, Statistical Analysis in Psychology and Education, Singapore: Mc Graw – Hill Book Co.
7. **Thanavathi C. (2012)**.*Teacher Education*.Thoothukudi.Perumal Publications.

Author

	Dr.V.Thamodharan, Principal (Rtd), VOC College of Education, Thoothukudi
--	---

Architecture Followed in Applied Mathematical Measurement used in Construction of South Indian Temples – An Overview

T.Vijai Anand*

Abstract

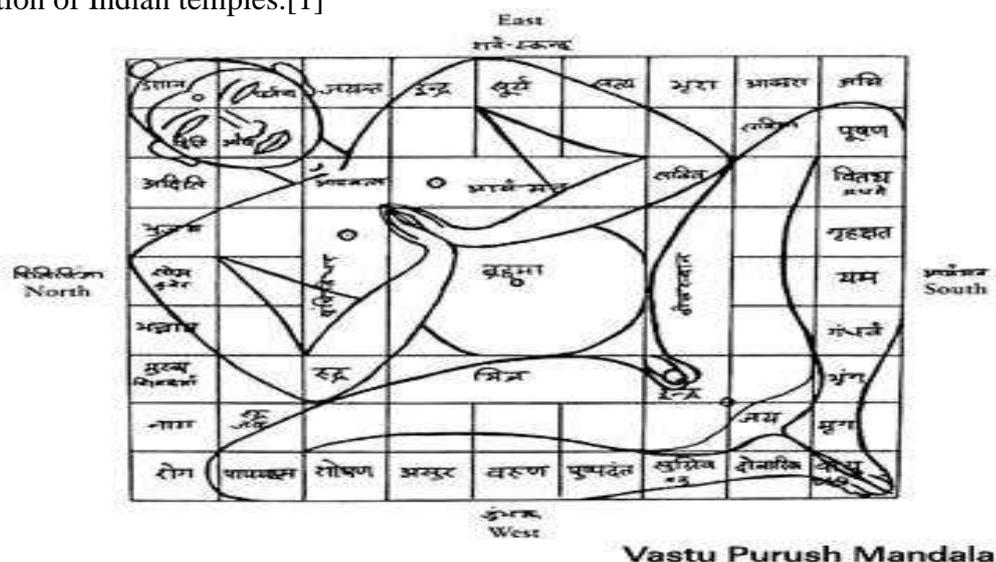
Mathematics plays pivotal role in the temple architecture. Temple constructions were done by mathematicians. Mathematical calculations were used in the architecture. In fact Brahadeeswarar temple in Tanjore was built with the knowledge of centre of gravity which is absolutely a topic in mathematics. The shadow of the tower will not fall outside the temple. It falls within the temple which is a remarkable architecture but with the use of mathematics. One of the world wonders pyramids were constructed with mathematical concepts such as angle, elevations etc. Byzantine emperor Justinian wanted an architect to build the Hagia Sophia as a building that surpassed everything ever built before, he turned to two professors of mathematics (geometers), Isidoros and Anthemius, to do the job. This tradition continued into the Islamic civilization. Islamic architects created a wealth of two-dimensional tiling patterns centuries before western mathematicians gave a complete classification.

Key Word: Architecture, calculations, pyramids, angle, elevations

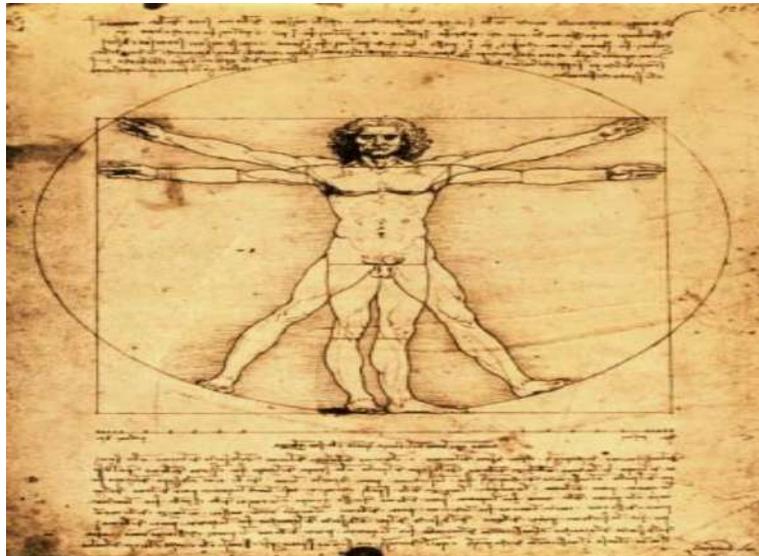
Introduction

Theories and Principles of Indian Temple Construction

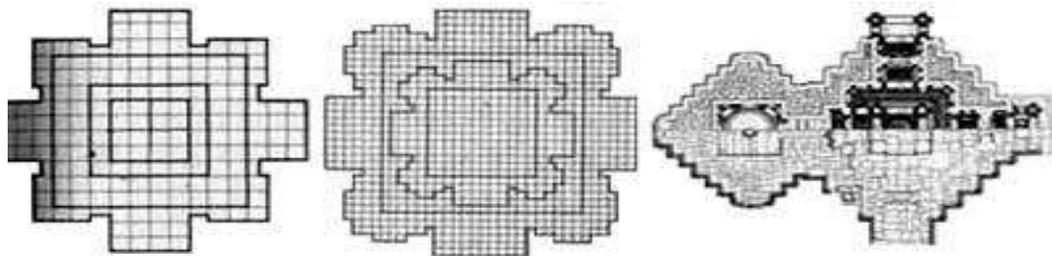
Before we go any further, it will be worthwhile to examine the principles that guided the Hindu Temple architect and mason. How was there a proliferation of high-quality work in throughout the country? Was it a spontaneous expression of creative energy or were there some basic rules to follow, some essential unity underlying the apparent diversity? We shall examine briefly the social, religious, metaphysical and material factors that led to the production of Indian temples.[1]



* Asst. Professor, Department of Mathematics, Kamban Engineering College, Tiruvannamalai



It is interesting to note that this idea, that of the human figure being the basis of a system of proportion, was also used in the European Renaissance by Leonardo de Vinci, and later by Le Corbusier, planner of Chandigarh in India, in his Modular system of measurement. Thus, having acquired magical and theological properties, the *Vastu Purusha Mandala* was fit to be the basis of temple construction, with many permutations and combinations being used to achieve the final form. Very simply, the central square could be used for the *garbagriha*, while the surrounding grid formed the *pradakshina-path* and outer wall, and so on



By increasing in complexity this system of proportion could spawn the most complex of forms with their basic unit remaining the square. It was by manipulation of this basic grid that the Indian architect created the greatest temples of India. [3].

The ancient shilpis used a great degree of precision in their measurements. Much of this system is followed by the present shilpis too. An interesting feature of these systems is the standard unit of measurement; the smallest unit mentioned is the anu or the particle, which is hardly perceptible. The anu measure was employed for extremely delicate or intricate or the most vital aspects of a sculpture; for instance, the eyes and facial features of the image of presiding deity; or in the amazingly delicate and minute carvings of the Hoyasla images. The norms and measures specified in the Southern texts, it is said, are still in use. These measures are in two categories; one for delicate and intricate work and the other for normal structures.

Look at the table of measurements for minute and delicate carvings

Eight anus (particles) = one nulu (breadth of a fine cotton or silk fiber),

Eight nulu = one hair (breadth of horse hair),

Eight hairs = one grain of sand,

Eight grains of sand = one mustard seed,

Eight mustard-seeds = one bamboo seed,

Eight bamboo-seeds = one angula.

The angula (1.875 cms) and the hasta (cubit, 45 cms) are the units that are normally used for deriving the dimensions, proportions, the height and other details of a sculpture. The Danda (four cubits) used for measuring less-delicate or lengthier structure is equivalent to 180 cms

One Hastha = one cubit= 45 cms;

Four Hasthas = one Danda= 96 angulas = 180 cms.

One Hastha =24 angulas = 45 cms.

Thus one angula = 1.875 cms.

The old Sanskrit texts too mention a set of measurements. According to them Anu or paramanu, the particle, was the smallest measure.

8 anus = one ratharenu (grain of dust);

8 ratharenu = one valagrassa (hair end);

8 valagrassa =One grain of yava;

4 yavas = one angula;

12 angulas = one vitasta or Tala (span)

2 Vitasta or Tala = Hastha (cubit) = 24 angulas

26 angulas= Dhanurbhagha (handle of a bow).

4hatas = One Danda;

8Dandas=One Rajju (rope)

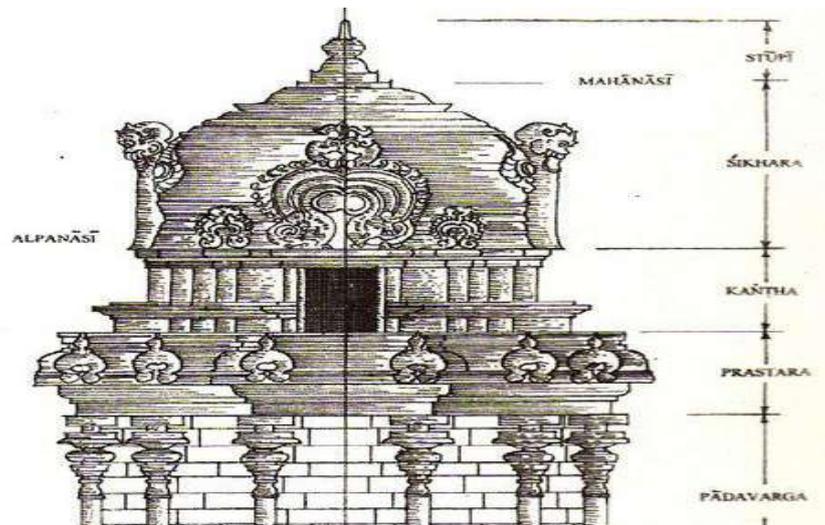
1000 Rajju = One Yojana [4]

The proportions of the head-trunk-arms-legs of images; and also their finer specifications like nose, nail, ears and their shapes are specified in the texts. Generally: it is dasatala (ten talas) for the height of image of male deity, navatala (nine talas) for his consort and astatala (eight talas) for bhakta. These are not absolute measurements; but are meant as guidelines to maintain proper proportions.(We shall discuss more about these aspects in the part dealing with Temple(Iconography.)

Further, the Vastu believes that every unit of time vibration produces a corresponding unit of space measure; and derives that the time is equal to space. This rhythm of time and space vibrations is quantified in terms of eight and as multiples of eight. According to the Vastu, at the subtle level the human form is a structure of eight spatial units apart from elements like the hair, kneecap and toe nails, each of which measures one-quarter of the basic measure of the body and, when added on to the body's eight units, increases the height of the total form to nine units. Traditionally, these nine units are applied in making sculptures of gods.

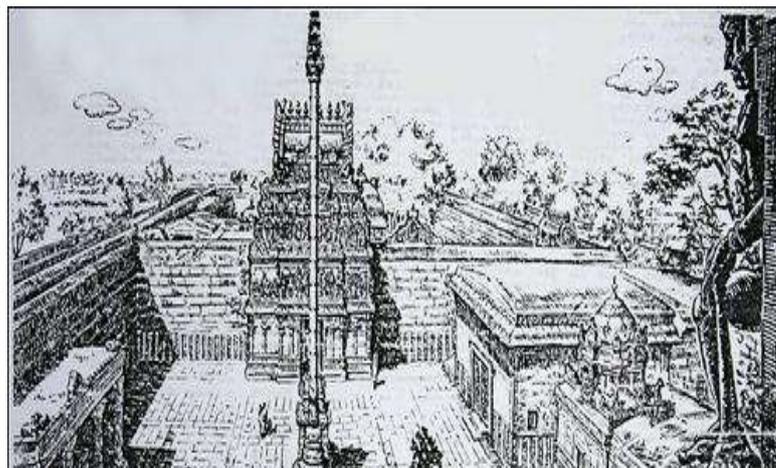
Similarly, the lengths, the breadths the heights of various elements of the temple too are related to each other by certain ratios. These lend esthetic appeal and stability to the temple structure. For instance, it is said, by restricting the height of the tower, Shikhara, to twice its width at the base, the weight of the tower is contained within itself. Further, as the size of the *pada* (bay, distance between two pillars) increases, the cross section of pillars also increases in size and width of beam has to be exactly same as that of the pillar. The size of the structure will also determine the various kinds of building materials to be used at different stages of the construction. They also help to control the proportions of the

dimensions of the temple. These norms carry shades of religious intentions too; the set of six formulae or Ayadivarga viz., the Aaya, Vyaya, Yoni, Tithi, Vaara and Nakshatra are applied by the Acharya to derive the proper orientation and dimensions of the structure. (More of Ayadivarga in the final part.)



The Vastu Purusha Mandala of the temple projects the temple in two main sections: the ground plan and the vertical alignment. The square, the rectangle, the octagon and the pentagon patterns drawn in the Mandala relate to the horizontal section or the ground plan. The subdivisions of the ground plan detail the *Brahmasthan* (the main shrine and smaller shrines) and the Mantapas (pavilions). The vertical alignment consisting the pyramid, the circle and the curve are meant for designing the Gopura (entrance ways), the Vimana (the structure above the main shrine) and the prakara (the walls). [5]

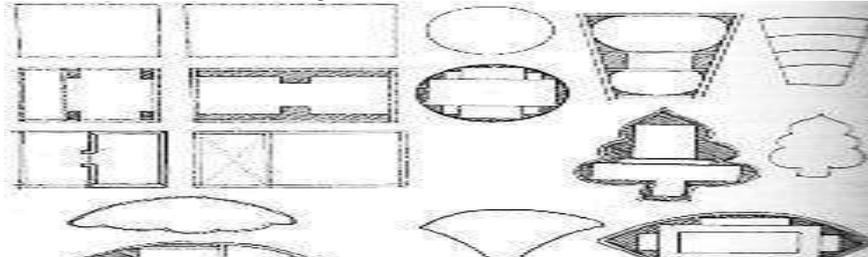
Temple Layout



The drawing of the court yard of the Shiva temple at Thiruvālangādu, by the famous artist Silpi

The Shilpa text Shiva-prakasha in its chapter titled vastu-bhumi-bedha, describes sixteen (*Shodasha*) types of temple layouts: the Square (*Chandura*); Rectangle (*Agatra*); Trapezium (with uneven sides – like a cart – *shakata*); Circle (*Vritta*); Elliptical

(*krittavritta*); triangular (*dwaja*); diamond or rhombus (*vajra*); Arrow (*shara*); umbrella (*chatra*); fish (*meena*); back of a tortoise (*kurma*); conch (*shanka*); crescent (*ardha-chandra*); pot (*kumbha*); sword (*khadga*); and lotus (*kamala*).



These layouts have specific applications; and are not to be used generally. For instance: the back of a tortoise (*kurma*), pot (*kumbha*), conch (*shanka*) and lotus (*kamala*) are recommended only for Vishnu and Shiva temples. Similarly the Square (*Chandura*), Rectangle (*Agatra*), fish (*meena*), diamond or rhombus (*vajra*) and sword (*khadga*) are recommended for Devi temples. The rest of the lay outs are for other (lesser) deities.

But all texts generally agree that the square or the rectangular shape of layout is the best and most auspicious. Varaha-samhita calls such layouts as *Siddha-bhumi*, the best of all. In case the layout is rectangular, the North South dimension should be greater than East-west dimension. It is also said, it would be better if the elevation on the west or the South is slightly higher.

For the limited purpose of this discussion let us stick to the square or rectangular layout, ignoring the rest. Else, I fear, it might get too complicated.

Having determined the suitability of the land for constructing a temple, and having drawn up the Vastu Mandala of the town and identified the temple location; the next stage is to draw up a construction plan. This specifies the location, the size and the orientation of the various temples to come up in the proposed complex. This again involves preparation of another Vastu Mandala.

Symbolic representation of cosmos

The preliminaries for construction of a shrine include preparations of a plan, Vastu Purusha Mandala, a Yantra, with unit cells (*pada*) of 64, 81 or 256 in number. The entire process is rich in symbolism. The square shape of the Mandala is symbolic of earth, signifying the four directions which bind and define it; and the Vastu is the extent of existence in its ordered site; Purusha being the source of existence.



The ground plan, again, is symbolic and is the representation of cosmos in miniature. The Vastu Purusha represents terrestrial world with constant movements. The grid made up of squares and equilateral triangles is imbued with religious significance; with each cell belonging to a deity. The position of the deity is in accordance to the importance assigned to him. The central portion of the square (*Brahma Sthana*) is occupied by the presiding deity of the temple; while the outer cells house deities of lower order.

Another important aspect of the design of the ground plan is that it is intended to lead from the temporal world to the eternal. The principal shrine should face the rising sun and so should have its entrance to the east. Movement towards the sanctuary, along the east-west axis and through a series of increasingly sacred spaces is of great importance and is reflected in the architecture.

This process of drawing the Mandala, known as *Pada-vinyasa* or *Vastu mandala Vinyasa* is essential not only for construction of the main temple but also for deciding upon the location, the orientation and the size of the sanctum; and for placement of retinue-divinities.

Let us look at the following example of an 81 cell parama-saayika layout.

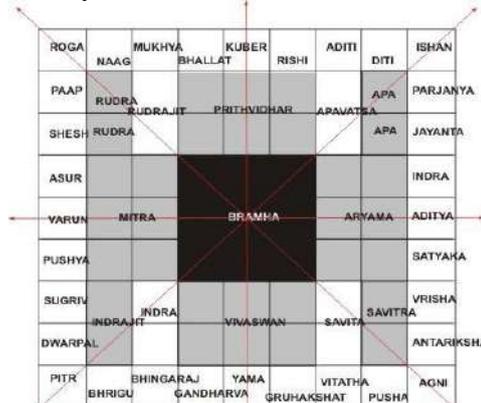
Roga	Ahi	Mukhya	Bhallata	Soma	Bhujaga	Aditi	Diti	Agni
Papa-Yakshman	Rudra						Apa	Parjanya
Shosha		Raja Yakshman	PRTHIVIDHARA			Apa Vatsa		Jayanta
Asura		M I T R A	BRAHMA			A R Y A M A N		Indra
Varuna								Surya
Kusuma Danta								Satya
Sugriva		Indra	VIVASVAN			Savitr		Ehrsha
Dauvanka	Jaya						Savitra	Antariksha
Pitarah	Mrga	Bhrga-Raja	Gar-dharva	Yama	Brahat-Kshata	Vitatha	Pushan	Anila

The site-plan is to be regarded as the body of the Vastu-purusha whose height extends from Pitrah (in the bottom left corner) to Agni (top right corner).

The Vastu purusha mandala is in some ways a development of the four pointed or cornered earth mandala having astronomical reference points. The mandala of 81 squares has 32 squares around the border representing the four cardinal points and the lunar constellations. It is the representation of all cyclical time; lunar and solar. Brahma is the God at the centre. The Manduka Mandala (8x8) the whole square would be divided by the two axes that go North-south and East-west.



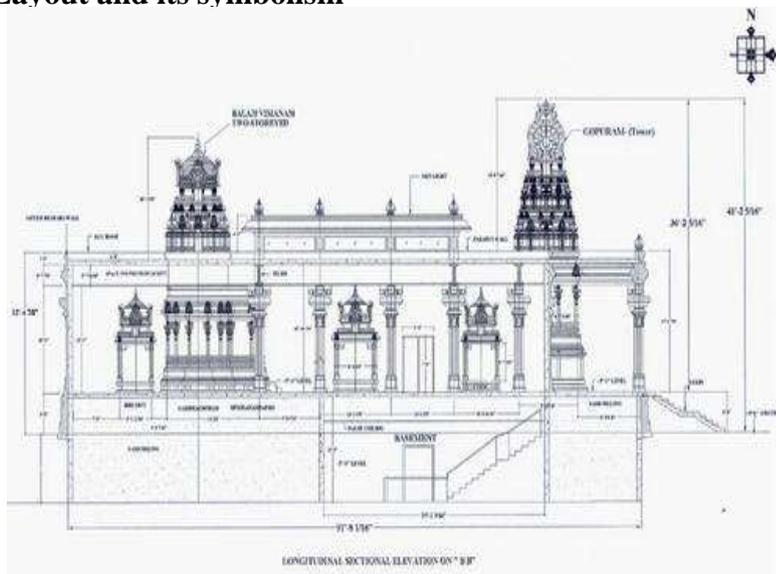
In the case of Paramasaayika Mandala (9x9), the entire square would be unevenly divided.



The center of the *mandala* consisting nine cells is dedicated to Brahma, the first of beings and the engineer of universal order. The Three cells to its east are for Aryaman, three cells to its west are for Mitra and three cells to its north are for Prihvidhara. In this site plan 32 spirits reside in the outer ring. There are 8 spirits in four corners. There are four spirits surrounding Brahma. Thus there are in all 45 spirits (including Brahma).

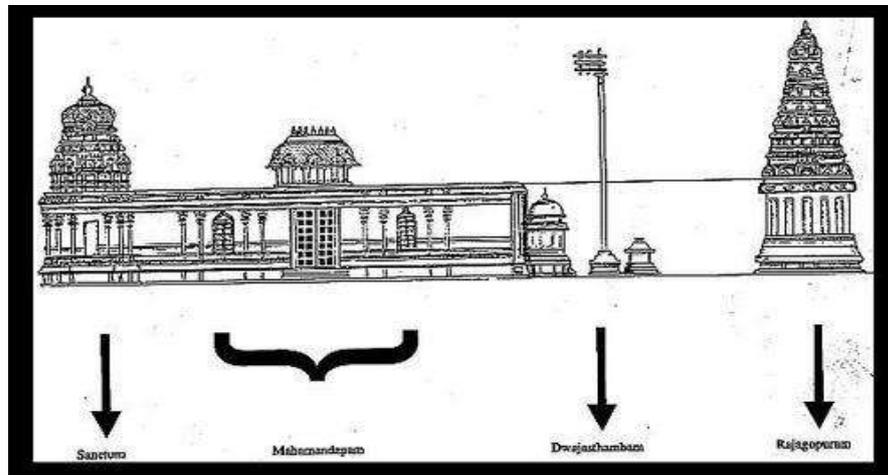
Dikpalas or guardian deities of different quarters, who assist in the affairs of universal management, are an important part of the Vastu. Indra, Agni, Yama, Niritti, Varuna; Vayu, Kubera and Isana; reside in the East, South-East, South, South-West, West, North-West, North and North-East respectively. All except Kubera are principal Vedic deities. This provides a method that determines the requirements of architecture in relation to its directions.

Temple Layout and its symbolism



Sri Venkateshwara temple, Cleveland

The Agama Shastras say that the Temple structure is a mini cosmos. The Temple entrance should face east – the direction of the Rising Sun. The ideal Temple should have at least one entrance, an Ardh-Mandapa, a Mandapa or a large hall, a Garba-Griha and a Shikara directly above the Garbha-Griha. The design comprises:



1. A Towering structure called the Rajagopuram (pyramid in pattern) on the Eastern side at the entrance to the Temple.
2. A Dwajasthamba (pillar) in line with the main shrine immediately after the Rajagopuram.
3. Near the Dwajasthamba is a lotus shaped pedestal for offerings, called the Balipecta.
4. A large Mandapa or hall for assembly of devotees.
5. The passage through the Mandapa leads to the "Garba-Griha" (womb chamber) where the main Deity is installed.
6. Ardha Mandapa adjacent to the main Mandapa and before the "Garba-Griha".
7. The Main Deity faces Eastward inside and the Garba-Griha is located inside a structure or sanctuary called the "Vimana".
8. The pyramidal or tapering roof over the Deity is called "Shikara" or "Gopuram" which is a dome.
9. There is a circumbulating passage or "Pradakshina Patha" around the Garba-Griha and Mandapa.

The above design applies both to the "Shiva" and "Vaishnava" Temples with small variations. Architecture is otherwise called "Shilpa" and the one who constructs the Temple is called a "Sthapati". The "Sthapati" is an expert in Temple architecture and idol creation. The procedure of worship in the Temple is known as "Agama Vidhi".

The Vastu-Purusha-Mandala

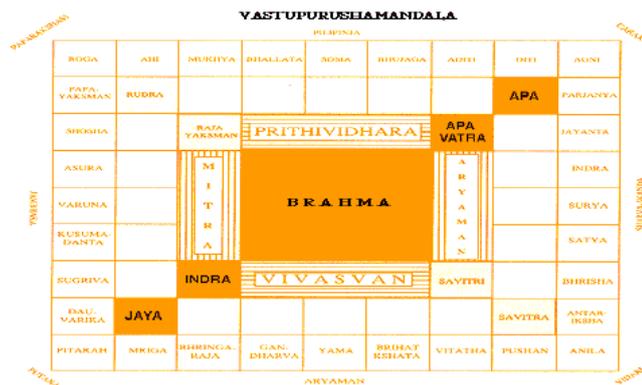
The goal of a temple's design is to bring about the descent or manifestation of the unmanifest and unseen. The architect or *sthapati* begins by drafting a square. The square is considered to be a fundamental form. It presupposes the circle and results from it. Expanding energy shapes the circle from the center; it is established in the shape of the square. The circle and curve belong to life in its growth and movement. The square is the mark of order, the finality to the expanding life, life's form and the perfection beyond life and death. From the square all requisite forms can be derived: the triangle, hexagon, octagon, circle etc. The architect calls this square the *vastu-purusha-mandala-vastu*, the manifest, *purusha*, the Cosmic Being, and *mandala*.

The *vastu-purusha-mandala* represents the manifest form of the Cosmic Being; upon which the temple is built and in whom the temple rests. The temple is situated in Him, comes from Him, and is a manifestation of Him. The *vastu-purusha-mandala* is both the body of

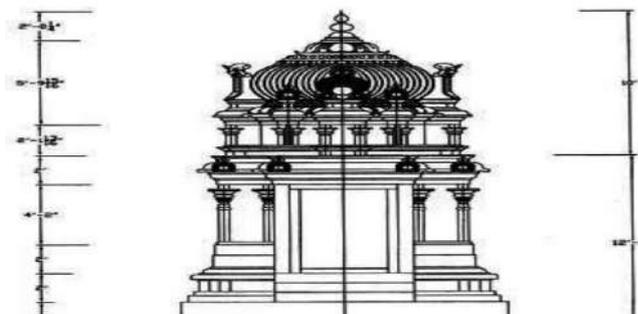
the Cosmic Being and a bodily device by which those who have the requisite knowledge attain the best results in temple building.

In order to establish the vastu-purusha-mandala on a construction site, it is first drafted on planning sheets and later drawn upon the earth at the actual building site. The drawing of the mandala upon the earth at the commencement of construction is a sacred rite. The rites and execution of the vastu-purusha-mandala sustain the temple in a manner similar to how the physical foundation supports the weight of the building.

Based on astrological calculations the border of the vastu-purusha-mandala is subdivided into thirty-two smaller squares called nakshatras. The number thirty-two geometrically results from a repeated division of the border of the single square. It denotes four times the eight positions in space: north, east, south, west, and their intermediate points. The closed polygon of thirty-two squares symbolizes the recurrent cycles of time as calculated by the movements of the moon. Each of the nakshatras is ruled over by a Deva, which extends its influence to the mandala. Outside the mandala lie the four directions, symbolic of the meeting of heaven and earth and also represent the ecliptic of the sun-east to west and its rotation to the northern and southern hemispheres.



The center of the mandala is called the station of Brahma, the creator of the universe. Surrounding Brahma are the places of twelve other entities known as the sons of Aditi, who assist in the affairs of universal management. The remaining empty squares represent akasha or pure space. The vastu-purusha-mandala forms a diagram of astrological influences that constitute the order of the universe and the destinies of human lives. When placed on the building site, along with astrological calculations, can the auspicious time to begin temple construction be determined.



In this method, the square of 4 (16) and the square of 8 (64) are considered auspicious. All the main horizontal as well as vertical proportions are with reference to either of these numbers (*mulasutra*). The area of the Vimana (the prasada or the tower above the sanctum)

is divided into 16 squares (maha-pitha) or 64 squares (manduka), as the case may be; in which case the width would be 4 or 8 units.

If the width of the Vimana is 4, then the width of the sanctum would be 2 units; the height of the Vimana would also be 4; and the base of the Vimana would be a cube. The Sikhara on top this cube would be twice its height (that is, 4×2). The cube and the Sikhara would together rise to a height of 12 units. This proportion builds a relationship between the vertical and horizontal extents of the other parts of the temple. In case the width of the sanctum is 8 units, The total height of the sanctum with Sikhara would be three times the width of the sanctum (8×3), of which the height of the Sikhara would be $\frac{2}{3}$ the total height.

B. In this method, the size of the sanctum and the Dwajasthamba is determined by the height of the image of main deity in the sanctum. The size of a temple is always a fixed multiple of the height of image of main deity.

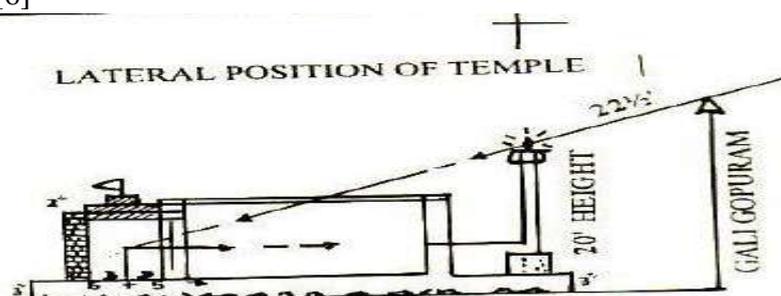
The normal height of a man is taken as six feet; and the sanctum would be in the shape of a square of its inner length and width, of six feet. The width of the sanctum walls would be two feet. The outer measurement of the sanctum would be 10 feet on each side.

A mantapa, in front of the sanctum, would have certain special features. The inner length and breadth of a mantapa should be twice that of the sanctum. For instance, in this case, the outer side of the sanctum is ten feet; and therefore the inner side of the Mantapa should be 20 feet, in width. This is achieved by extending the face (door) side of the sanctum on either side to form the inner dimension (20') of the Mantapa.

If the directions and measurements are correctly followed the sun rays should fall into the mantapa for six hours (from 9.00am to 3.00pm, if the sun rise is at 6.00am). For a sanctum of this size, the idol, in standing position, should be six feet tall. If the idol is less than six feet tall, its pedestal should be raised to obtain the required height. The idol should be installed exactly at the mid-point of the chosen direction (usually facing east).

The Dwaja-ssthamba should be perpendicular and placed directly opposite to the idol. A line drawn at an angle of $22\frac{1}{2}$ degrees from the mid-point between the brows of the idol should cut the top of the Dwajasthamba. The height of the Dwajasthamba thus is related to the height of the image. Some scholars say, this perhaps is related to the axis of the earth which makes an angle of $22\frac{1}{2}$ degrees with the sun. Sometimes, a hole is made in the roof of the mantapa, at the point where the imaginary line drawn from the idol emerges out of the roof of the mantapa, on its way to reach the top of the Dwajasthamba. Thus, it is ensured that the mid point between the brows of the idol, the hole in the roof and the top of Dwajasthamba are all aligned along one straight line. The line when extended further from the top of the Dwajasthamba should touch the Kalasha on top of the Gopura.

Thus, the distance and the height of the Gopuram get related to the height of the idol and the Dwajasthamba. [6]





The Agama literature includes the Shilpa- Shastra, which covers architecture and iconography. The aspects of temple construction are dealt in DevalayaVastu; and Prathima deals with the iconography. Sometimes, the term Shipa is also used to denote the art of sculpting; but here Shipa refers to the practice of the technique, while Shastra refers to its principles.[7]

Reference

[1] Ashish Nangia – Article

[2] Rao, The Indian Temples, Its Meaning p126.

[3] Ashish Nangia – Reference Article

[4] Shilpa Shastra – Temple Architecture - Measurement & Scale – MarabuKattidaKalai - MuthiahuSthaphti

[5] Temple Architecture - DevalayaVasthu – page12

[6] Temple Architecture - DevalayaVasthu part 15

[7] Temple Architecture – Arunachala Temple book

commonly used in financial analysis to tackle the problem of sample size and distribution uncertainty.

Singh A. & Tandon P. (2012), in their paper they examined the financial performance of SBI and ICICI banks public sector and private sector respectively they compare the financial performance of SBI and ICICI banks on the basis of ratios such as credit deposit, net profit margin etc. The period of study taken is from the year 2007-08 to 2011-12. The study found that SBI is performing well and financially sound than ICICI Bank has better managing efficiency than SBI.

Roy M. & Sabah N. (2014), in their paper analyzed the performance of Oil and Natural Gas Corporation by using ratio analysis tool particularly those which are related to financial statement and find out the strength and weakness of the company and their position in the market for the balance of 2010-2013 are used.

Objectives

- ✓ To analyse the financial performance of ONGC Ltd.
- ✓ To provide Suggestive measures for the betterment of the company under study.

Research Methodology

This study is micro analytical in nature and is entirely based on secondary data. The data has been retrieved from various sources such as Annual Reports, research journals, articles, magazines, newspapers and conference proceedings. The study period is limited to eight years (2011 to 2018). For the purpose of testing of Hypothesis various statistical tools including Mean, Correlation and student's t test.

Hypothesis of the Study

Ho: There is no significant relation between Net Sale and Net Profit of the company

Data Analysis

In order to analyze the Financial Performance of ONGC Ltd., the researchers have used the Consolidated Balance Sheet, Consolidated Profit and Loss Account, Ratio Analysis and in order to calculate t test, M S Excel and SPSS software has been used.

Table No. 1: Consolidated Balance Sheet of ONGC Ltd., as on the 31st march 2011 to 31st march 2018
Rs in crores

Particulars	2011	2012	2013	2014	2015	2016	2017	2018
Liability	Rs (Cr)							
Equity share capital	4277.76	4277.76	4277.76	4277.76	4277.76	4277.76	6416.63	6416.63
Reserves	111049.49	132161.37	148250.25	167873.23	176176.64	193535.88	214772.86	197602.27
Net worth	115327.25	136439.13	152528.01	172150.99	180454.40	197813.64	221189.49	204018.90
Secured Loan	595.09	5958.75	5259.89	28137.08	18383.86	44547.65	55681.89	101246.05
Unsecured	5466.31	9264.44	15190.95	17451.05	33487.47	0	0	0
Total Debt	6061.4	15223.19	20450.84	45588.13	51871.33	44547.65	55681.89	101246.05
Minority Interest	1989.11	2208.43	1946.65	2912.54	2473.13	2651.81	4124.30	15606.00
Total CL and Provisions	69691.11	77778.95	78531.85	104259.14	102883.82	97572.53	89209.96	139363.96
Total	193068.87	231649.70	253457.35	324910.80	337682.69	342585.63	370205.61	460234.91

Liabilities								
Assets								
Net Block	35858.76	38541.97	49104.07	155923.43	88928.03	166276.73	174159.46	287569.56
Capital Work in Progress	91949.69	110498.57	123926.36	72033.68	154413.13	57668.48	57169.28	0
Investment	3100.01	2920.71	2128.18	4745.9	4749.14	33386.85	61159.71	67334.58
Loans and Advances	22804.05	26916.55	30503.67	36897.85	44092.24	42314.75	43009.83	55790.19
Cash and Bank Balance	20815.82	27889.55	19619.05	24480.13	16096.92	24689.04	13013.63	5078.37
Inventories	8567.56	13168.01	12780.39	14801.46	10606.22	9918.07	11364.08	30563.04
Sundry Debtors	9972.98	11714.33	15395.61	16028.36	18797.01	8331.71	10329.62	13899.17
Total Assets	193068.87	231649.70	253457.35	324910.80	337682.69	342585.63	370205.61	460234.91

Source: Annual reports of ONGC Ltd. From 2011 to 2018

Source: Annual reports of ONGC Ltd. From 2011 to 2018

Table No. 2

Consolidated Profit and Loss account of ONGC Ltd. as on 31st march 2011 to 31st march 2018								
								<i>Rs in Crore</i>
Particulars	2011	2012	2013	2014	2015	2016	2017	2018
Sales Turnover	120134	147306	165849	178205	166067	13566.21	142148.96	362246.18
Less Excise	0	0	3445.67	3728.13	5177.12	0	0	0
Net sales	120134	147306	162403	174477	160890	135664.21	142148.96	362246.18
Add: Other incomes	3717.09	7935.47	5490.04	6893.71	5964.44	171.6	8506.26	7716.27
Total income	123851	155241	167894	181371	166854	135835.81	150655.22	369962.45
Less Expenses								
Raw-material consumed	32143.2	46787.2	61730.4	68276.8	61912.6	3666.93	37839.1	197919.05
Power and Fuel	1940.81	2453.23	218.2	286.6	876.3	1182.38	1070.49	0
Other manufacturing Expenses	23925.9	26775.3	30151.3	6834.66	20926.5	22749.75	44156.05	0
Employee Cost	1714.88	1695.75	2458.51	2530.88	9361.34	9230.17	12146.62	6092.69
Miscellaneous expenses	9630.31	11332.9	14089.6	39296.7	12523.8	19097.89	0	101376.93
Depreciation	11364.4	12933	12094.2	16580.9	18033	16384.06	17435.45	23088.54
Other written off	9261.95	10513.6	11045.7	8488.13	10951.4	6846.44	5539.21	0
Total Expenses	89981.4	112491	131788	142295	134585	79157.62	118186.92	328477.21
Operating profit (EBIT)	33870	42750	36106	39076	32269	56678.19	32468.3	41485.24
Less interest	437.72	434.94	483.8	624.34	2862.38	3765.58	2953.44	4999.04
EBT	33431.9	42315.3	35621.9	38451.8	29406.8	52192.61	29513.44	36486.2
Less Tax	11488.3	14374.6	12751.9	12760.4	9697.41	6950.7	9561.73	13139.51
Adjusted PAT (Net Profit)	21944	27941	22870	25691	19709	45961.91	19951.71	23346.69

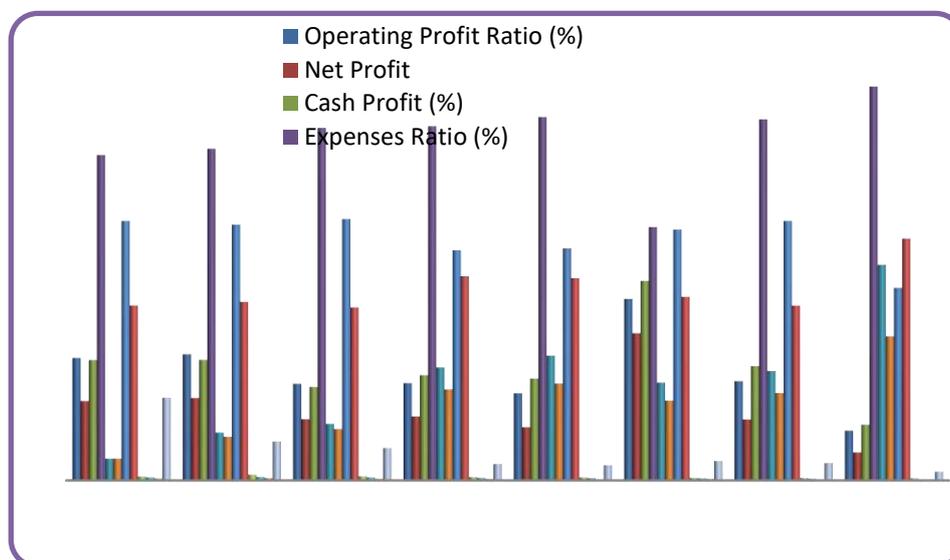
Source: - Annual Reports of ONGC Ltd. From 2011 to 2018.

Table No.3

Data Analysis of ONGC Ltd. as on the basis of Ratios

Year	Operating profitRatio (%)	Net Profit (%)	Cash Profit (%)	Expenses Ratio (%)	Debt-equity Ratio (%)	Funded Debt to Total Capitalization Ratio (%)	Equity Ratio (%)	Solve ncy Ratio (%)	Curre nt Ra tio	Liquid Ratio	Absolute Liquid Ratio	Capital Gearin g Ratio
2011	28.19	18.26	27.72	74.9	5	4.99	59.73	40.26	0.86	0.67	0.45	19.02
2012	29.02	18.96	27.74	76.36	11	10.03	58.89	41.10	1.3	0.77	0.54	8.96
2013	22.23	14.08	21.52	81.14	13	11.82	60.17	39.82	0.91	0.67	0.37	7.45
2014	22.39	14.72	24.22	81.55	26	20.93	52.98	47.01	0.75	0.55	0.33	3.77
2015	20.05	12.25	23.45	83.65	28.74	22.32	53.43	46.56	0.67	0.51	0.23	3.47
2016	41.77	33.87	45.95	58.34	22.52	18.38	57.74	42.25	0.57	0.44	0.33	4.44
2017	22.84	14.03	26.30	83.14	25.17	20.11	59.74	40.25	0.54	0.36	0.20	3.97
2018	11.45	06.44	12.81	90.67	49.62	33.16	44.32	55.67	0.45	0.17	0.04	2.00
Average	24.74	16.57	26.21	78.71	22.63	17.71	55.87	44.11	0.75	0.51	0.31	6.63

Sources: Derived from annual reports of ONGC Ltd. (2011-2018)



Interpretation

Liquidity Ratio:- From the above table it is depicted that the liquidity ratios are continuously Fluctuating from year to year but in the year 2018 huge decrease in absolute liquid ratio and liquid Ratio has been found, while as the cash profit ratio is also showing decline trend in 2013, 2015 and 2018, in 2018 it falls from 26.30 to18.12 as compared to last year. In case of current ratios the current Ratio is also falling from 2012 to 2018 continuously.

➤ Profitability Ratio: - while analyzing profitability ratio from the above table it has been found That the profitability of the under studied company is showing a fallen trend

except the year 2016. In 2018 the Profitability of the understudied company is bad as compared to the other studied years.

- Solvency Ratio:- As regarding to solvency ratio it has been retrieved that the total liabilities to Outsiders are Increasing continuously as in case of debt equity ratio and funded debt to total capitalization Ratio there is a continuous increase from 2011 to 2018 while the equity ratio shows the same trend as it gets decreased from 2011 to 2018 continuously.

Testing of Hypothesis

Goodness of fit in the model that is R square is only .029 and is insignificant as the value of F is .178 and its significance value is .688 and thus it can be said that model is not good. Further the coefficient of Net Sales that is t is also insignificant (Refer Table of Coefficient)

Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.170 ^a	.029	-.133	9101.08390

a. Predictors: (Constant), NetSales

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14766294.446	1	14766294.446	.178	.688 ^b
	Residual	496978368.483	6	82829728.080		
	Total	511744662.929	7			

a. Dependent Variable: NetProfit

b. Predictors: (Constant), NetSales

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	29227.691	8453.912		3.457	.014
	NetSales	-.019	.045	-.170	-.422	.688

a. Dependent Variable: NetProfit

Interpretation

The Goodness of fit in the model that is R square is only .029 and is insignificant as the value of F is .178 and its significance value is .688 and thus it can be said that model is not good. Further the coefficient of Net Sales that is t is also insignificant (Refer Table of Coefficient)

Findings

As concern to operating profit of the company it is decreasing constantly from year to year which is due to increase in cost of goods or total expenses. The Net profit of the company is also showing a diminishing trend which is due to increase in the outsiders funds because the company is paying more and more interest from last 8 years. Regarding total expenses and current Liabilities are also getting increased from last 8 years In relation

to sales. It has been found that the current liabilities of the company are increasing more and more as compared to the current assets; the ratio of current assets in relation to current Liabilities is decreasing. But still the company has good composition of current assets and Current Liabilities. The company is relying more on internal equity but from last four years the Company is taking more debt. The company has good solvency ratio .Regarding solvency ratio the company is maintaining a good balance of assets that can be claimed by Outsiders. But the total liabilities to outsiders in relation to total assets are also increasing. Which will not be good for the company As regarding to Capital gearing the internal equity of the company is getting decreased as compared to the total debt because the ratio of capital gearing is showing decline from last 4 years.Net sales of the company are also showing a decreasing trend in relation to inventory from 2011 to 2015 but in 2015 and 2018 the company has increased the net sales which is good Inventory conversion period also gets fluctuated from year to year as it increased in 2012 ,2014 and 2018 which is not good while in last years it gets decreased which is good for the company. As regarding to total liabilities, the total liabilities are getting increase continuously.

Suggestions

The operating profit of the company is decreasing which is not good for the company. The company should decrease the cost of goods so that it can increase the operating Profit. The company should also control on the interest paid to outsiders for the debt, so that the net profit can be increased. The company should also maintain a good control on the expenses in relation to total sales so that it can maximize its profit.

Current assets are also showing decline trend in relation to current liabilities of the company. But the company has a very good mix of current assets and current liabilities and company should try to maintain it in future and should also try to keep control on its current liabilities.

The company is using more equity than debt the company should maintain an appropriate mix of owner's funds and outsiders funds in financing the firm's assets as doing in last 8 years. The equity ratio has been decreasing from year to year which is not good for the company because the company will not be able to maintain the long term solvency position of the company, if this ratio will continuously decrease so the company should maintain a balance between the shareholders funds and the total assets.

The total capitalization is well mixed but the company should not take more funds from outsiders as it will reduce the net profit of the company.

Company has very good solvency position and it should try to hold control over total liabilities in relation to outsider's funds also in future. The solvency ratio of the company is good but is increasing during the years which we study the same should be maintained by the company as low as possible so that the company can manage more satisfactory or stable long term solvency position of the firm.

Net sales of the company are also showing a decreasing trend in relation to inventory the company should increase the net sales so that more and more profit can be achieved. Inventory conversion period of the company is also good.But it gets fluctuated form year to year the company should try to keep this period low as it has done in last year.

The total debt of the company is increasing from 2011 to 2018 the company should try to retain a good mix of debt and equity if the company will depend or take more debt than the cost of capital will increase which may drop off the profit of the company.

Regarding the liabilities of the company the liabilities are also increasing from 2011-2014 and then in last three years at enormous rate which the company should try to avoid company should enhance the total assets as compared to the total liabilities which is good for the growth as well as the prosperity of the company.

Conclusion

From the above findings and suggestions of ONGC Ltd. It is worth to conclude that the total debt of the company is increasing at higher rate from 2011 to 2018; the company should get good control on total debt as well as on the expenses in order to make more and more profit. With regard to liabilities the liabilities also gets enhance from 2011 to 2018 and total assets are diminishing in 2011 and 2015 and 2018 as the working capital of the company is in negative sign in last 8 years except in 2012 which is not good for the company. The company should retain a good proportion of assets and liabilities which is good for the profitability, solvency, viability as well as growth of the company. As concern to net profit, Net profit is also decreasing because the outsiders funds are increasing even though the company is using more equity the company should also take very good care of debt-equity ratio. Overall the company is doing well.

References

- Singh, P. K. (2003). *Financial Appraisal of IDBI Bank Ltd. Through Financial Indicators*, The Management Accountant, vol. 38, No. 6, pp: 425-433.
- Bagechi, S.K (2004). *Accounting Ratios for Risk Evaluation*, The Management Accountant, New Delhi, vol.39, No.7, and pp: 571-573.
- Tyagi, Avnish, Ajitsaria, Naman (2005). *Financial Analysis of Hindustan Liver Limited*, Research journal of business and management, vol: 1, No.2, pp: 1-40.
- Vanitha, S., & Selvam, M. (2007). *Financial Performance of Indian Manufacturing Companies during Pre and Post Merger*, International Research Journal of Finance, and Economics, vol: 12, No.2, pp: 7-35.
- Gopinathan, T. (2009). *Financial Ratio Analysis for Performance Check: Financial Statement Analysis with Ratios Can Reveal Problem Areas*, Journal of financial ratio analysis for performance evaluation, vol: 14, pp: 37-5
- Jenkins, L. (2009). *Contribution Margin and Breakeven Analysis: Determining when a Company will Realize a Profit*, Journal of contribution margin and breakeven analysis, vol:8, pp: 65-83.
- Das, S. (2010). *Analysis and Interpretation of Financial Statements: Case Studies*, Thesis submitted in Department of Mining Engineering National Institute Of Technology, Rourkela, vol: 21, issue: 9, pp: 28-45
- Okundamiya, M.S, and Ojieabu, C.E. (2010). *Performance Analysis and Evaluation of Communication Systems*, Journal of Mobile\Communication, vol. 4, No. 2, pp: 47-53.
- Uzma, S. (2010). *Financial Indicators for Growth Performance: Comparison of Pharmaceutical Firms in Pakistan*, International Conference on Business and Economics Research, vol.1 (2011), IACSIT Press,Kuala Lumpur, Malaysia.
- Mistry, D. S. (2011). *Performance Appraisal of Indian Automotive Industry through Production Trend Analysis*, Inverts Journal of Management, vol. 3, No. 1, pp: 33-46.

- Sheela, C (2011). *A Study on Financial Performance of Wheels India Ltd. – Chennai*, Interdisciplinary Journal of Contemporary Research in Business. Vol. 2, issue: 10.
- Singh Anurag and Tandon Priyanka (2012). *A study of financial performance: A comparative study of SBI and ICICI banks*, International Journal of Marketing, Financial Services & Management Research vol.1 Issue: 11, ISSN: 2277-3622.
- Tiwari Anshuja, Parray Firdous (2012). *Analysis of short-term financial position – A case study of Ranbaxy ltd*, A Journal of Economics, and Management vol.1, Issue 6, ISSN:2278-0629.
- Taqi Muhammad (2013). *Financial appraisal and analysis of minerals and metal trading corporation*, Research journal of Management and Social Sciences vol. 9, No. 1, pp: 49-66.
- Roy Manish and Sabah Naeem (2014). *Financial statement analysis of ONGC*, *Research journal of Business and Management Invention*, Volume 3, Issue 9, pp: 55-60

Books

- Sharma and Gupta, Financial Management, Kalyani publishers, 2005, 6th revised edition
- I.M.Panday, Financial Management, Upkaar publishers, 2000, edition 3rd

Websites

- www.ongc.com
- www.googlefinance.com
- www.moneycontrol.com

Does Break Up Lead to Break Down? Effect of Demerger on financial Firm Performance: The cases of Demerger

Dr Seema Singhal*

Abstract

Ratio analysis is regarded as one of the best tools in analyzing and comparing the time series accounting data of different companies. That is why it has been used in the present paper. For our study some important ratios of demerged companies for four years before demerger and four years after demerger have been calculated. The year of demerger is omitted because it is considered as transitional period. The ratios used for this purpose are leverage ratios. The purpose of this paper is to empirically examine the financial performance of companies after demerger. Companies exist to create value for their shareholders. To do so not only they hunt for new production techniques and/or design new marketing strategies but also seek to gain by inventing new things at the financial side. Demerger is one of such innovation. The objective of this paper is to empirically find/ascertain whether demerger has improved the performance of the selected companies. To do so ratio analysis has been selected as the technique. Selected financial ratios have been computed for pre- and post demerger period and the same has been compared. It is observed that 44.44% demerged companies have earned satisfactory returns after demerger. 55.56% companies have not earned satisfactory returns after demerger. In nutshell shareholders assessed the effectiveness of management in running the company after demerger in 2 companies Godrej and HMT. Return on Net Worth is important from shareholders point of view. The demerged companies Nirma, SAIL and Zee have shown significant decrease in Return on Net worth means shareholders of these companies have not earned satisfactory returns after demerger. The impact of demerger on the profitability related to sources of long term funds of a company has been assessed by measuring Return on Capital Employed Ratio. Return on Capital Employed is to test the profitability related to sources of long term funds. Only two companies have shown significant increase in ROCE means long term funds of owners and lenders (Capital employed) are used efficiently after demerger. These companies are Wipro and Godrej. It is clear from the tables only 3 companies have shown significant decrease in ROCE means capital employed is not used efficiently after demerger. These companies are Nirma, SAIL and Zee.

Keywords: Demerger, Credibility Position, Financial performance, Media Announcement, Return on capital employed, Return on net worth Ratio.

Introduction

The purpose of this paper is to empirically examine the financial performance of companies after demerger. Companies exist to create value for their shareholders. To do so not only they hunt for new production techniques and/or design new marketing strategies but also seek to gain by inventing new things at the financial side. Demerger is one of such innovation. The objective of this paper is to empirically find/ascertain whether demerger has improved the performance of the selected companies. To do so ratio analysis has been

* Associate Professor, Department of Commerce, MDSD Girls College, Ambala City, Haryana, India

selected as the technique. Selected Debt Equity Ratios have been computed for pre- and post demerger period and the same has been compared.

Objectives of the Study

To study to what extent, demergers have resulted in improving the financial performance. For this purpose, financial performance of pre and post de-merger period will be measured, analyzed and compared in respect of selected cases.

Scope of the Study

The sample companies for the present study have been selected in two stages. First, about 70 demergers during 1996 to 2006 were taken from Prowess 3.1; a database developed by Centre for Monitoring Indian Economy. Subsequently the companies whose announcement date of demerger is not given were left out.

In the second stage those companies were excluded whose Stock Price Data for two years before announcement of demerger and two years after the announcement is not available. This exercise leaves me with a sample of 18 demerged companies which I have taken for my research work. The list of demerged companies was identified first from Bombay Stock Exchange (BSE) and National Stock Exchange web sites then finally from prowess 3.1.

Table 1-Date of Announcement of Demerged companies

Sr. No.	Company Name	Company Name	First Media Announcement date
1.	CEAT LTD	CEAT	MAY 18, 1999
2.	CROMPTON GREAVES LTD	CROMPT	JULY 7, 2000
3.	DABUR INDIA LTD	DABUR	AUGUST 9, 1999
4.	GODREJ INDUSTRIES LTD	GODREJ	AUGUST 1. 2000
5.	GRASIM INDUSTRIES LTD	GRASIM	JANUARY 7, 2000
6.	HMT LTD	HMT	JULY 16,1999
7.	INFOSYS TECHNOLOGIES LTD	INFO	JUNE 30, 2000
8.	J.K. SYNTHETICS LTD	JKSYNT	OCTOBER 14, 2000
9.	KESORAM INDUSTRIES LTD	KESO	JULY 7, 2000
10.	KODAK INDIA PRIVATE LTD	KODAK	NOVEMBER 1, 1999
11.	LARSON AND TOUBRO LTD	LARSON	JANUARY 19, 2000
12.	NIRMA LTD	NIRMA	JUNE 30, 2000
13.	RAYMOND LTD	RAYMD	MAY 25, 1999
14.	STEEL AUTHORITY OF INDIA LTD	SAIL	DECEMBER 8,1999
15.	TATA COMMUNICATION LTD	TATA	OCTOBER 21, 1999
16.	VOLTAS LTD.	VOLTAS	JUNE 19, 2000
17.	WIPRO LTD.	WIPRO	AUGUST 19, 1999
18.	ZEE ENTERTAINMENT ENTERPRISES LTD	ZEE	JULY 5, 1999

Sources of Data

Besides reputed books and journals, the study is based on data taken from Prowess 3.1; a database developed by Centre for Monitoring Indian Economy (CMIE), company reports and Capitaline data basis. Web sites like bseindia.com, nseindia.com. moneycontrol.com, indiainfoline.com have also been extensively consulted.

Statistical Techniques Used

In order to analyze the data, student's t-test is used to evaluate the statistical significance of differences in paired means of financial variables computed for two sample groups, namely pre- demerger period and post demerger period. Pre and post demerger average ratios are calculated to measure the improvement in financial position. Then their significance is tested with the help of t- test and p- value.

Research Methodology

The research tools used are as under:

- Ratio Analysis
- Mean
- Standard Deviation
- F-test
- T-test

Review of literature

Autio (1997) investigated evolution of academic spin-offs took place due to the need for a transformation process. The result of academic research, the evolved knowledge cannot easily put onto the market because its complexity would be an obstacle to be instantly useful for industry. Therefore special process was needed which called knowledge transfer or technology transfer. The technology based spin-off firms can precede this transformation through which the scientific knowledge is being converted into technological knowledge. Academic spin-off companies can be classified according to their role played in the knowledge transfer. Some firms were really dedicated to help with bringing scientifically result to the market.

Ronald, Roger and Agapos (1998) in their research examined 72 firms which have gone for spin off from 1979 to 1993 which showed that spin off announcement abnormal returns are significantly related to the firm's information environment. The result also indicated that analysts significantly increase their estimates of short-term earnings for spinoff firms at the time of separation, but do not significantly revise their long-term earnings forecasts. Further, it was also shown that neither the short-term nor long-term earnings revisions are significantly different across prediction error groups. The existence of a differential earnings prediction error based abnormal announcement period stock returns and the lack of a difference in earnings forecast revisions across prediction error groups supports the assertions of earlier studies that spinoff wealth effects cannot be attributed solely to expected performance gains.

Mulherin and Boone (2000) in their paper investigated cause and effects of acquisitions and divestitures during the 1990s. They compared the acquisition and divestiture activity of a sample of 1305 firms from 59 industries in the 1990-1999 periods. They found a significant occurrence of these two forms of restructuring during the period. ``They also found significant industry clustering in acquisition and divestiture activity during the period. Consistent with results for the 1980s, they found that acquisition activity is greater in industries undergoing deregulation, although the specific industries affected by deregulation differ between the 1980s and 1990s. In contrast to the evidence for the 1980s, they found that acquisitions in the 1990s were not restricted to industries with low growth options. They found that the acquisitions and divestitures in the 1990s create wealth. Indeed the wealth creation from the two restructuring events is comparable in magnitude. The combined target and bidder return at the announcement of an acquisition averages

3.5%, while the announcement return for corporate divestitures averages 3.0%. Moreover, the wealth creation for both acquisitions and divestitures was directly related to the relative size of the restructuring event. The result of the study was significant industry clustering in both acquisitions and divestitures. They also concluded that the announcement effects of two forms of restructuring both acquisitions and divestitures in the 1990s increased shareholder wealth. Moreover, the wealth effects for both acquisitions and divestitures were directly related to the relative size of the event. The symmetric, positive wealth effects for acquisitions and divestitures were consistent with a synergistic explanation for both forms of restructuring and were inconsistent with no synergistic models based on entrenchment, empire building and hubris.

Mohanty and Jain (2000) in their article had explained that the shareholders of the demerged company and resulting company had gained handsomely from demerger. They took a sample of two firms LG and Grasim. They proposed a model that can be used both to determine the swap ratio and to find the impact of demerger on the shareholders wealth. According to them business strategies are increasingly recommending the strategy of being focused on the core competence of the companies. Empirical research had done both in India and abroad has also provided evidence that diversified companies have not created as much value as the focused companies for their shareholders. They had attempted a model that can help the management in determining the swap ratio in case of demerger. This model showed that for positive synergy. Expected from one demerger, they will always a range of swap ratios, which will be acceptable to both the groups of shareholders.

They have applied the model to the famous Grasim – Indian Rayon demerger. Using event study methodology, we estimated the synergy expected by the market. We found that the shareholders of Grasim were willing to exchange 0.46 share of Grasim for every share of Indian Rayon. The shareholders of Indian Rayon, on the other hand, were willing to receive at least 0.22 share of Grasim for every share of Indian Rayon. The actual exchange ratio of 0.3 share of Grasim for every share of Indian Rayon was, therefore, acceptable to both the groups of shareholders. We found that the market reacted favorably when the demerger announcement was made. Since demerger makes a company more focused, it shows that there is a focus – premium in the Indian stock market. The major objective of the article was to develop a model that can be used to determine the swap ratios in case of mergers. If somebody has all the information required in the model, then one can easily obtain the range of exchange ratios that will be acceptable to both the groups of shareholders. Since, we did not have information regarding synergy from the demerger; we made certain assumptions regarding market behavior to estimate synergy. One may not agree with the assumptions made by us. However, one can use this model to analyze any real life demerger, if one has the necessary information.

Gabor Raday (2000) concluded that in the 80s and 90s, the accelerated development of technology caused several changes in most of sciences, even in the field of business formations. The classical value chain transformed, the university science center obtained a bigger focus and the role of research organizations is getting more and more important. New business form emerged and became popular: the academic spin-off firm. However, the spin-off companies are well known and widely used ventures in the corporate business for a long time, especially at technology-oriented industries. For the time being, there are plenty of literatures and completed survey available regarding both academic and corporate spin-off. Some of them are engaged to reveal the critical success factors of spin-off

companies and several models were created. The hypothetical question of this study whether common success factors exist for both type of spin-off even if they are established in quite different environments. Using the relevant international literature and available public data of academic and corporate spin-off firms, six aspects were investigated: Raison d'être, management, investment, networking, location and relation to intellectual property. As a result of this study, common success factors of spin-off companies having different origins could be identified.

Chan-Lau (2001) evaluated whether the implications of official initiatives and changes in business practices are seen by the market as having contributed to the restructuring process by examining the average stock price impact of 1011 restructuring announcements in the periods before and after the implications of the Commercial Rehabilitation Law (CRL) on April 1, 2000. The result indicate that restructuring plans based on improvements in disclosure and mergers had a more positive stock price impact during the post-CRL period compared to the pre-CRL period. Also, the negative impact of labor force reductions announcement on the announcing firms' stock price during the pre- CRL period disappeared in the post- CRL period. The other types of announcements have not had a major impact on stock prices either in the pre- CRL and Post-CRL period In the case of sales of fixed assets and capital reductions, the results suggest that measures claimed at reducing excess capital in the corporate sector are being viewed skeptically by the market.

Pawaskar (2001) studied 36 mergers that had taken place in India between 1992 and 1995. Using accrual measures of accounting spread over three years before and after the merger, the study found that the profitability of the merged firms was impacted negatively due to the merger, i.e., corporate performance did not improve significantly post-merger.

Kirchmaier (2002) in his paper examined a sample of 48 European Demerger and their security price reactions. For a period ranging from one and a half years prior to the demerger announcement through to three years after the execution date, the relative performance of the parent, spin-off and the combined effect is analyzed relative to the overall market performance. Significant announcement effects were established for a sample. In addition, significant positive long-term value creation, in particular in year 2 after the demerger, was found for the spin-off but not for the parent firm. While size has, on average, a decisive but inverse impact on performance for both parent and spin-off, takeover activity did not.

Clubb and Stouraitis (2002) explored the extent to which the relevant information necessary to evaluate sell-offs is embodied in the profitability of the sale - the price received by the seller over the value-in-use of the divested assets, where the latter was a function of past operating earnings and book value. Results showed that sell-off profitability is substantially more significant in explaining the market reaction to divestiture announcements than the previous literature has suggested. Strong evidence is provided of a positive relation between selling firm abnormal returns during sell-off announcements and profit on the sale, which remains significant after controlling for the motivation behind the sell-off, the use of the proceeds from the sale and the presence of agency costs of managerial discretion. Sell-off profitability explained a major portion of selling firm abnormal returns and is one of the most significant determinants of the market reaction to divestiture announcements.

Suryanarayana (2003) explained in his article that Grasim finally succeeded in getting hold of the cement capacities of L & T, which makes it the biggest player in the country.

This acquisition has several interesting features like the business first being spun off with another company, sale of stake in that company and finally an offer for it. While for the buyer it was almost a dream comes true, for the seller it was a rectification of a mistake but without any punishment. He examined the L & T report and concluded that for L & T the movement in cement was unprofitable, right from the beginning. For fiscal 2002, its cement division was the poorest performer with both the operating margin and return on capital employed being the lowest among the segment of L & T.

Mehrotra, Mikkelson and Partch (2003) conducted a study with a sample of 98 spinoffs during the period 1979-1997. They examined the differences in financial leverage between parent and spun-off firms that emerge from corporate spin-off. Their tests control for past financing choices and the costs of adjusting capital structure, factors that can obscure cross-sectional patterns among firm's targets leverage ratios. They emerged that the firms that emerge from spin-off with more financial leverage have a higher cash flow return on assets, lower variability of industry operating income, and a greater proportion of fixed assets. The positive relation between profitability and the use of financial leverage, in a setting that is free of pecking order effects, is particularly important because it contrasts with existing evidence. They suggested no evidence that managerial incentives or governance characteristics affect the difference in leverage ratios in firms that emerge from spin-off.

Vyas Pavak (2015) examines that the demergers and the announcement period price reaction of demergers during the year 2012-2014. He studied total 51 demergers of companies listed in India and tried to establish that demergers results into abnormal returns for the shareholders of the parent company. Using event study methodology the authors have analyzed the security price performance of the announcement day effect 10 days prior to the announcement to 10 days post demerger announcement. He found significant out-performance of the security over the benchmark index post demerger announcement ranging from 1.74% average abnormal return for a demerger announcement to 0.16% average abnormal return 10 days following the announcement.

Ratio Analysis

Ratio analysis is regarded as one of the best tools in analyzing and comparing the time series accounting data of different companies. That is why it has been used in the present study. For our study some important ratios of demerged companies for four years before demerger and four years after demerger have been calculated. The year of demerger is omitted because it is considered as transitional period. The ratios used for this purpose are liquidity ratios, solvency ratios, activity ratios and efficiency ratios. These ratios are:

Profitability Ratios

While valuing the efficiency and worth of companies, we need to know the return that a company is able to earn on its capital, namely its equity plus debt. A company that earns a higher return on the capital it employs is more valuable than one which earns a lower return on its capital. The tools for measuring these returns are:

Return on Capital Employed (ROCE)

Return on Capital Employed thus reflects the overall earnings performance and operational efficiency of a company's business. It is an important basic ratio that permits an investor to make inter-company comparisons. Return on Capital Employed is valuable financial ratio for evaluating a company's efficiency and the quality of its management. A company that earns a higher return on the capital it employs is more valuable than one, which earns a

lower return on its capital. ROCE is calculated by dividing Earning before interest and tax by Average Total Capital Employed. The figure for profit before interest and tax is arrived at after adding back taxes paid, depreciation, extraordinary one-time expenses, and deducting extraordinary one-time income and other income (income not earned through mainline operations), to the net profit figure. Capital employed refers to the long-term funds invested by the creditors and the owners of a firm. It is the sum of long-term liabilities and owner's equity. The operating profit of a company is a better indicator of the profits earned by it than is the net profit. ROCE indicates the efficiency with which the long-term funds of a firm are utilized.

Table 2-Return on Capital Employed Ratio of Selected Companies before and after Demerger

Sr. No.	Name	Before demerger				After demerger				
		-4	-3	-2	-1	1	2	3	4	
1	CEAT	-0.55	0.01	-05.72	2.42	2.64	-2.43	-1.40	2.39	
2	CROMPT	11.89	4.16	02.65	2.63	-14.12	-4.79	4.08	10.76	
3	DABUR	14.08	17.76	15.13	12.46	16.88	15.83	11.97	16.83	
4	GODREJ	2.96	-4.49	0.26	-05.85	04.96	04.39	08.33	17.41	
5	GRASIM	8.96	7.14	05.56	3.64	7.64	05.37	6.48	15.10	
6	HMT	-19.95	-22.06	-16.90	-24.02	-	294.95	-14.67	-1.77	-8.49
7	INFOSYS	28.38	35.01	43.29	38.58	56.21	46.12	38.07	40.66	
8	JKSYNT	-4.33	-8.33	-32.70	-62.29	-	136.37	863.50	64.45	-0.93
9	KESORAM	10.54	6.70	2.22	0.45	4.38	4.01	7.29	9.32	
10	KODAK	-36.77	4.66	5.59	7.31	14.60	14.02	8.60	7.47	
11	LARSON	13.17	10.18	8.32	6.55	3.83	4.58	11.53	10.18	
12	NIRMA	26.19	30.99	24.97	19.05	11.98	8.95	17.25	11.73	
13	RAYMOND	12.37	0.96	3.48	6.07	-0.69	6.98	8.53	9.14	
14	SAIL	6.91	6.87	2.35	-0.07	-11.36	-6.92	-	18.50	-4.01
15	TATA COM	23.91	35.75	24.44	27.86	13.81	26.22	23.59	14.81	
16	VOLTAS	5.67	-8.35	-3.29	-3.17	-2.96	-23.82	6.62	-2.85	
17	WIPRO	18.61	17.88	16.21	25.52	51.82	48.80	37.29	27.81	
18	ZEE	40.56	34.05	33.37	33.94	4.31	3.51	2.29	2.14	

Table 3-Test of Significance for difference in Return on Capital Employed Ratio

Sr. No.	Company Name	Average before demerger	Average after demerger	Increase/ Decrease	t-statistics	p- value
1	CEAT	-00.960	0.300	1.260	-0.587	0.579
2	CROMP	05.333	-1.018	-6.350	1.087	0.319
3	DABUR	14.858	15.378	0.520	-0.323	0.757
4	GODREJ	-01.780	8.773	10.553	-2.898	0.027
5	GRASIM	06.325	8.648	2.323	-0.938	0.384
6	HMT	-20.733	-79.970	-59.238	0.826	0.440
7	INFOSYS	36.315	45.265	8.950	-1.755	0.130
8	JKSYNT	-26.913	197.663	224.575	-0.993	0.359
9	KESORAM	04.978	6.250	1.273	-0.490	0.642
10	KODAK	-04.803	11.173	15.975	-1.476	0.190
11	LARSON	09.555	7.530	-2.025	0.842	0.432
12	NIRMA	25.300	12.478	-12.823	4.267	0.005
13	RAYMOND	05.720	5.990	0.270	-0.081	0.938
14	SAIL	04.015	-10.198	-14.213	3.951	0.008
15	TATA COM	27.990	19.608	-8.383	2.025	0.089
16	VOLTAS	-02.285	-5.753	-3.468	0.491	0.641
17	WIPRO	19.555	41.430	21.875	-3.718	0.010
18	ZEE	35.480	3.063	-32.418	18.246	0.000

* denote significance at 1% level, ** denote significance at 5% level, *** denote significance at 10% level

Table 4-Effect on Average Return on Capital Employed Ratio after demerger

Results after demerger	Number of companies	In percentage terms (%)
ROCE ratio increased	10	55.56
ROCE ratio decreased	8	44.44
Total	18	100

Table 5 -Classification on the basis of Significance level of the increase and decrease in Return on Capital Employed Ratio of Selected Companies

Level of significance	Companies indicating an increase in ROCE ratio		Companies indicating a decrease in ROCE ratio	
	Number of companies	In percentage terms	Number of companies	In percentage terms
1%	1.0	10.0	3.0	37.5
5%	1.0	10.0	-	-
10%	-	-	1.0	12.5
More than 10%	8.0	80.0	4.0	50.0
Total	10.0	100.0	8.0	100.0

The impact of demerger on the profitability related to sources of long term funds of a company has been assessed by measuring Return on Capital Employed Ratio.

Table 2 shows ROCE of eighteen companies four years before demerger and four year after demerger.

Table 3 shows increase and decrease in average of ROCE, t - test and p – value.

Table 4 reveals that ROCE has increased in 55.56 % cases but decreased in 44.44% cases.

Table 5 shows that companies of increased ROCE are 10 out of eighteen that is 55.56 %. Out of these ten companies one (i.e. 20 %) are significant at 1% level of significance. 10% at 5%, 80 % are significant at more than 10% level of significance. After demerger ROCE of eight firms has decreased i.e. 44.44%. Table 5 shows that 37.5% are significant at 1% level of significance.

It is observed that in 55.56% demerged company's long term funds of owners and lenders (Capital employed) are used efficiently after demerger. In 44.44% companies Capital employed is not used efficiently.

The impact of demerger on the profitability related to sources of long term funds of a company has been assessed by measuring Return on Capital Employed Ratio. Return on Capital Employed is to test the profitability related to sources of long term funds. Only two companies have shown significant increase in ROCE means long term funds of owners and lenders (Capital employed) are used efficiently after demerger. These companies are Wipro and Godrej. It is clear from the tables only 3 companies have shown significant decrease in ROCE means capital employed is not used efficiently after demerger. These companies are Nirma, SAIL and Zee.

Return on Net Worth

Return on net worth (RONW) is defined as Profit after Tax divided by net worth. It is a basic ratio that tells a shareholder what he is getting out of his investment in the company. It determines earning power of equity capital and corresponds more closely to the shareholders' value maximization hypothesis. It is comparable across time (pre-and post-demerger time of eight years) .It helps shareholders to assess the effectiveness of management in running the company. ROCE is a better measure to get an idea of the overall profitability of the company's operations, while RONW is a better measure for judging the returns that a shareholder gets on his investment.

The impact of demerger on the return of the shareholders of a company has been assessed by measuring Return on Net worth Ratio.

Table 6-Return on Net worth Ratio of Selected Companies before and after Demerger

Sr no	Name	Before demerger				After demerger			
		-4	-3	-2	-1	1	2	3	4
1	CEAT	-1.45	0.01	-6.87	2.83	2.90	-2.67	-1.56	2.52
2	CROMPT	15.99	5.47	3.38	3.74	-27.47	-7.76	5.81	15.14
3	DABUR	18.87	23.15	23.04	20.79	25.90	22.48	15.99	20.86
4	GODREJ	4.80	-7.41	0.47	-11.79	7.59	6.56	13.15	25.90
5	GRASIM	16.04	12.30	9.28	5.96	12.03	8.54	10.51	23.14
6	HMT	-69.98	-127.3	-156.74	-265.6	272.88	44.29	-11.41	-71.69
7	INFOSYS	30.50	35.78	43.29	38.58	56.21	46.12	38.07	40.66
8	JKSYNT	-10.39	-21.45	-147.04	200.96	25.55	20.13	9.75	-0.18
9	KESORAM	24.54	13.04	4.38	0.90	9.59	8.52	7.29	15.17
10	KODAK	-	5.97	6.36	8.34	17.62	15.18	8.85	7.52

		45.89							
11	LARSON	15.52	13.73	12.98	10.92	6.66	8.16	11.53	15.04
12	NIRMA	28.51	40.68	36.98	30.62	23.02	14.53	17.25	16.15
13	RAYMOND	18.61	1.65	6.49	11.60	-1.14	9.38	8.53	11.83
14	SAIL	18.22	17.19	5.81	-0.18	-36.65	-	21.58	-66.13
15	TATA COM	27.28	36.95	24.44	27.86	13.82	26.23	23.59	14.81
16	VOLTAS	11.78	17.76	-7.10	-6.15	-3.64	-	24.03	6.62
17	WIPRO	33.44	28.81	20.47	26.78	50.10	46.63	36.81	27.94
18	ZEE	39.24	33.51	33.32	36.61	4.38	3.64	2.41	2.23

Table 7-Test of significance for difference in Return on Net worth Ratio

Sr. No.	Company Name	Average before demerger	Average after demerger	Increase/ Decrease	t- statistics	p- value
1	CEAT	-1.370	0.298	1.668	-0.673	0.526
2	CROMPT	7.145	-3.570	-10.715	1.102	0.313
3	DABUR	21.463	21.308	-0.155	0.067	0.948
4	GODREJ	-3.483	13.300	16.783	-2.887	0.028**
5	GRASIM	10.895	13.555	2.660	-0.679	0.522
6	HMT	-154.933	58.518	213.450	-2.489	0.047**
7	INFOSYS	37.038	45.265	8.228	-1.705	0.139
8	JKSYNT	5.520	13.813	8.293	-0.115	0.913
9	KESORAM	10.715	10.143	-0.573	0.103	0.921
10	KODAK	-6.305	12.293	18.598	-1.385	0.215
11	LARSON	13.288	10.348	-2.940	1.403	0.210
12	NIRMA	34.198	17.738	-16.460	4.892	0.003*
13	RAYMOND	9.588	7.150	-2.438	0.528	0.616
14	SAIL	10.260	-35.700	-45.960	3.903	0.008*
15	TATA COM	29.133	19.613	-9.520	2.307	0.061***
16	VOLTAS	-4.808	-6.115	-1.308	0.147	0.888
17	WIPRO	27.375	40.370	12.995	-2.286	0.062***
18	ZEE	35.670	3.165	-32.505	21.685	0.000*

* denote significance at 1% level, ** denote significance at 5% level,*** denote significance at 10% level

Table 8 -Effect on Average returns after demerger

Results after demerger	Number of companies	In percentage terms (%)
RONW Ratio increased	8	44.44
RONW Ratio decreased	10	55.56
Total	18	100

Table 9-Classification on the basis of Significance level of the increase and decrease in Return on Net Worth Ratio of Selected Companies

Level of significance	Companies indicating an increase in RONW ratio		Companies indicating a decrease RONW ratio	
	Number of companies	In percentage terms	Number of companies	In percentage terms
1%	-	-	3	30.00
5%	2	25.00	-	-
10%	1	12.50	1	10.00
More than 10%	5	62.50	6	60.00
Total	8	100.0	10	100.0

Table 6 shows RONW of eighteen companies four years before demerger and four year after demerger.

Table 7 shows increase and decrease in average of RONW, t - test and p – value.

Table 8 reveals that RONW has increased in 44.44 % cases but decreased in 55.56% cases.

Table 9 shows that companies of increased RONW are 8 out of eighteen that is 44.44 %. Out of these eight companies two (i.e. 25 %) are significant at 5% level of significance. 12.5% at 10%, 62.5 % are significant at more than 10% level of significance. After demerger RONW of ten firms has decreased i.e. 55.56%. Table 9 shows that 30% are significant at 1% level of significance.

It is observed that 44.44% demerged companies have earned satisfactory returns after demerger. 55.56% companies have not earned satisfactory returns after demerger. In nutshell shareholders assessed the effectiveness of management in running the company after demerger in 2 companies Godrej and HMT. Return on Net Worth is important from shareholders point of view. The demerged companies Nirma, SAIL and Zee have shown significant decrease in Return on Net worth means shareholders of these companies have not earned satisfactory returns after demerger.

References

1. Autio, M (1997): **New Technology based Firms in Innovation Networks Symplectic and Generative impacts**, Research Policy 26, pp 263-281.
2. Ronald W.Best, Roger J.Best and Agapos A.M. (1998): **Earnings Forecasts and the Information Contained in Spinoff Announcements** The financial Review 33, pp 53 – 68.
3. Mulherin J. Harold and Boone L. Audra (2000): **Comparing Acquisitions and Divestitures**, Journal of Corporate Finance 6, pp 117-139.
4. Raday Gabor (2000): **Academic Spin-off Ventures and Corporate Spin-off Firms at the High-Tech Industries**, Debrecen University's Faculty of Economics and Business Administration ,Radaydrug Ltd., pp 1 - 10.
5. Chan- Lau A. Jorge (2001): **Corporate Restructuring in Japan: An Event – Study Analysis**, IMF Working Paper, International Capital Markets Department, December, pp 1 - 14.
6. PawaskarVardhana (2001): **Effect of Mergers on Corporate Performance in India**,Vikalpa, Vol. 26, No. 1, January, pp 19- 31.
7. Kirchmaier, T.(2002): **The Performance of European Demergers**,Working paper, Centre for Economic Performance, London School of Economics, May, pp 1-37.

8. Suryanarayana A (2003): **Grasim: Dream Come True?**ICFAI Reader, August, pp 21-25.
9. Mehrotra Vikas, MikkelsonWayn, Partch Megan (2003): **The Design of Financial Policies in Corporate Spin-offs**, The Review of Financial Studies, winter 2003; 16, 4; ABI/INFIRM Global pp 1359-1388.
10. Chang Saeyong and Hertz Michael (2004): **Equity Ownership and Firm Value: Evidence from Targeted Stock Repurchases** The Financial Review 39, pp 389 – 407.
11. Mishra A.K. and Goel Rashmi (2005): **Returns to Shareholders from Mergers: The Case of RIL and RPL Merger** IMB Management Review, September pp 69 - 79.
12. Malik K.Amit and RakshitDabdas (2006): **Corporate Restructuringthrough Demerger: A Case Study**, Journal of Finance India (December) Vol. XX No.4 pp 1321– 1338.
13. Nag G.C. (2006): **Demerger: A Boon for Shareholders' Market Value**,Effective Executive, July, pp 63 -71.
14. SudarsanamSudi and Qian Binsheng (2007): **Shareholder Value Gains from European Spinoffs: The Effect of Internal and External Control Mechanisms**, JEL Classification: G 34, pp 1 – 47.
15. Mann Singh Bikramjit and Kohli Reena (2008): **An Empirical Analysis of Bank Mergers in India: A Study of Market Driven versus Non-Market Driven Mergers**, Decision, Vol. 35, No. 1, January-June, pp 47-73.
16. Vyas Pavak (2015):” Impact of Demerger Announcement on Shareholder Value: Evidences from India” Dec.,The Italian Journal of Public Policy.

An Overview of different Models and Drivers of Employee Engagement

Dr. M.G.P. LAKSHMI

Prof. B. MOHAN VENKATA RAM

Abstract

The concept of employee engagement started receiving increased attention since the dawn of the new millennium. A growing importance of the concept is evident from the literature available in the vertical. This Paper gives a overview of different models of Employee Engagement propounded by the think – tank of this concept across the world.

Keywords: Employee Engagement, Models, Conceptual framework, Drivers of engagement.

1. Introduction

Organisations understood, these changing career paradigm shifts and have developed programs, benefits and cultural change, to enhance the commitment and retention of its talent (Exhibit .1).

Exhibit 1: Work Force Changing Career Paradigms

WORK FORCE : CHANGING CAREER PARADIGMS	
OLD PARADIGM <ul style="list-style-type: none">• Job Security• Longitudinal Career Paths• Job/Person Fit• Organizational Loyalty• Career Success• Academic Degree• Position/Title• Full-Time Employment• Retirement• Single Jobs/Careers• Change in jobs based on fear• Promotion tenure based	NEW PARADIGM <ul style="list-style-type: none">• Employability Security• Alternate Career Paths• Person/Organization Fit• Job/Task Loyalty• Work/Family Balance• Continuous Relearning• Competencies/Development• Contract Employment• Career Sabbaticals• Multiple Jobs/Careers• Change in jobs based on growth• Promotion performance based

Source: Kenneth Nowack; Leadership, Emotional Intelligence and Employee Engagement.....

All sources define engagement to some degree by its outcomes and something given by the employee, which can benefit the organisation. They generally agree that engaged employees feel a sense of attachment towards their organisation, investing themselves not only in their role, but also in the organisation as a whole(Gemma Robertson-Smith and Carl Markwick). Business and organisations function best when they make their employees' commitment, potential, creativity and capability central to their operation. Clearly, having enough cash, and a sensible strategy, are vital. Nevertheless, how people behave at work can make the crucial difference between business and operational success or failure.

Employee engagement strategies enable people to be the best they can at work, recognising that this can only happen if they feel respected, involved, heard, well led and valued by those they work for and with. As a representative of the home insulation, company put it: "employee engagement is when the business values the employee and the employee values the business". Engaged employees have a sense of personal attachment to their work and organisation; they are motivated and able to give of their best to help it succeed – and from that flows a series of tangible benefits for organisation and individual alike (David MacLeod Nita Clarke).

One of the most influential studies of engagement was carried out by Kahn. However, Kahn argued that Goffman's work focused on fleeting face-to-face encounters, while a different concept was needed to fit organisational life, which is "ongoing, emotionally charged, and psychologically complex" (Diamond and Allcorn 1985).

To gain further understanding of the varying levels of attachment individuals expressed towards their roles, Kahn examined several disciplines. It was found that theorists (Slater, Smith and Berg) psychologists (Freud) and group sociologists (Goffman, Merton) had all recognised the idea that individuals are naturally hesitant about being members of ongoing groups and systems. As a result, they "seek to protect themselves from both isolation and engulfment by alternately pulling away from and moving towards their memberships" (Kahn). The terms developed by Kahn (1990) integrate previous ideas taken from motivation theories that people need self-expression and self-employment in their work lives as a matter of course (Alderfer, Maslow).

According to Robinson, employee engagement can be achieved through the creation of an organisational environment where positive emotions such as involvement and pride are encouraged, resulting in improved organisational performance, lower employee turnover and better health. Engaged organisations have strong and authentic values, with clear evidence of trust and fairness based on mutual respect, where two way promises and commitments – between employers and staff – are understood, and are fulfilled (David MacLeod Nita Clarke).

Engaged employees freely and willingly give discretionary effort, not as an 'add on', but as an integral part of their daily activity at work. In particular, engagement is two way: organisations must work to engage the employee, who in turn has a choice about the level of engagement to offer the employer. Each reinforces the other (David MacLeod Nita Clarke).

Engaged employees are also more likely to display discretionary behaviour. Engagement has been found to be closely linked to feelings and perceptions around being valued and involved, which in turn generates the kinds of discretionary effort that lead to enhanced performance (Konrad). Such evidence implies that management needs to share control and allow employees to influence important decisions. If they do not, they risk having a workforce, which is not, and cannot be, engaged.

2. Models of Employee Engagement

Model-1

A model produced by the CIPD (2006) and presented in the organisation's Employee Attitudes and Engagement Survey' of 2006, brings various elements of employee engagement together in one overarching model. This then formed the basis of the survey, which was carried out across the private and public sectors.

The CIPD Annual Survey report (2006) defines engagement in terms of three dimensions of employee engagement:

- Emotional engagement – being very involved emotionally in one's work;
- Cognitive engagement – focusing very hard whilst at work; and
- Physical engagement – being willing to 'go the extra mile' for your employer.

The survey report states that the very engaged will go one step further and speak out as advocates of their organisation, in what they describe as a 'win-win' situation for the employee and the employer.

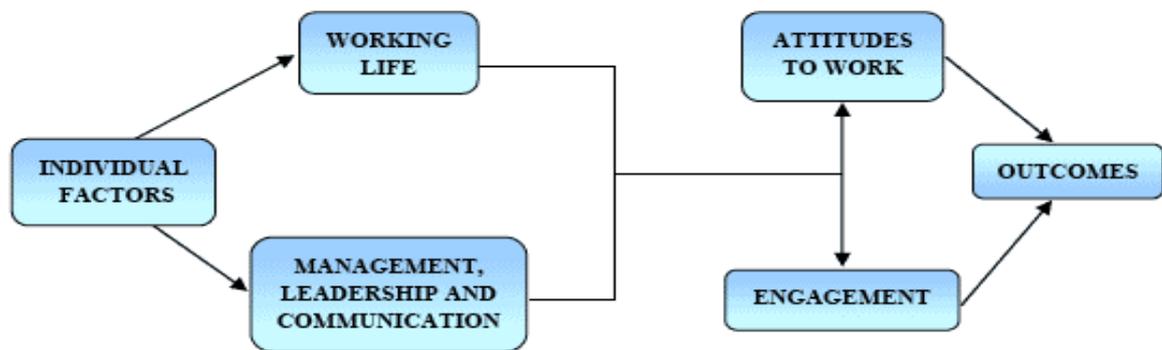


Figure 1: The CIPD (2006) Employee Engagement model

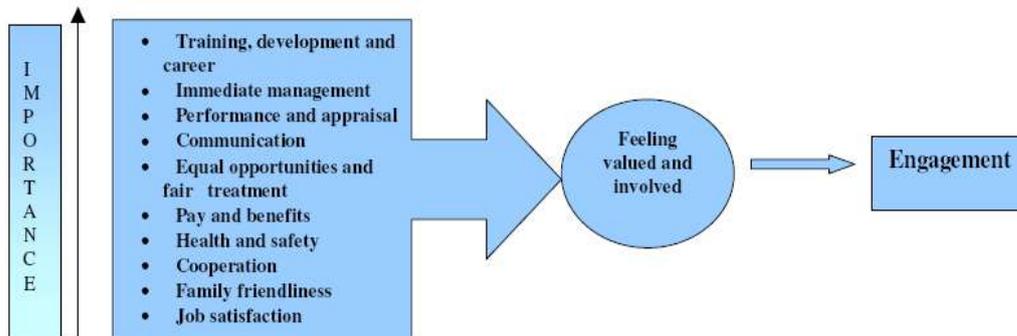
Source: CIPD (2006)

Management, leadership and communication refers to how employees view their managers and leaders, how much opportunity they have in participating in organisational decision making and levels of trust. As CIPD (2006) highlights, these factors have been found in research to be very important in determining levels of engagement.

Model-2

The approach to employee engagement, discussed by Robinson et.al., stresses the importance of 'feeling valued and involved' as a key driver of engagement. Within this umbrella of feeling valued and involved there are a number of elements that have a varying influence on the extent to which the employee will feel valued and involved and hence engaged. Figure 2, which is based on a diagnostic model in Robinson et al, illustrates the drivers of engagement suggested through a survey of over 10,000 NHS employees. Robinson et al., state that this can be a useful pointer to organisations towards those aspects of working life that require serious attention if engagement levels are to be maintained or improved.

Figure 2: Robinson et al (2004) model of the drivers of employee engagement



Source: Robinson et al (2004)

Although tested within the NHS, the authors suggest that many of the drivers of engagement will be common to all organisations, regardless of sector.

Model-3

Penna presents a hierarchical model of engagement factors (Fig 3), which illustrates the impact each level will have on the attraction, engagement and retention of talent. They propose a model with “meaning at work” at the apex, which they maintain is borne out by the research carried out into meaning at work. In this context, Penna defines meaning at work as the situation where a job brings fulfilment for the employee, through the employee being valued, appreciated, having a sense of belonging and congruence with the organisation and feel, as they are contribution. In this model, as the hierarchy ascends and the organisation successfully meets each of these engagement factors, the organisation becomes more attractive to new potential employees and becomes more engaging to its existing staff.

Figure 3: Penna (2007) model of hierarchy of engagement



Source: Penna (2007)

Interestingly in this model, the ‘hygiene’ factors appear at the foundation of the model, indicating the nature of these factors as a necessary, but not sufficient, building block upon which the organisation must further develop in order to engage staff.

Model-4

Work by Schmidt frames engagement (Fig 4) within the context of organisational health and Workplace Well-Being (WWB). Schmidt defines WWB as “a holistic approach to creating high performance organisations through establishing the right conditions to generate high levels of employee engagement. This approach assumes that achieving high levels of organisational performance depends on employees who are strongly committed to achieving the goals of the organisation, and who show this through their actions. This model highlights the importance of commitment to the job as driven by job satisfaction, and notes the importance of the supportive organisation. The model depicts the flow of organisational dynamics that begins with recruitment and moves through support for work, to workplace well-being, to engagement and finally to high levels of organisational performance.

Figure 4: Schmidt (2004) model of organisational dynamics in the public sector



Source: Schmidt (2004)

This model implies that the foundations of engagement lie in policies to recruit and retain the right workforce (i.e. in terms of employing specific competences, knowledge and experiences required for success as well as diversity) and to promote health, safety, and wellbeing. Schmidt bases the model on a variety of studies and writings, implicit in which is the notion, that it is WWB that drives engagement.

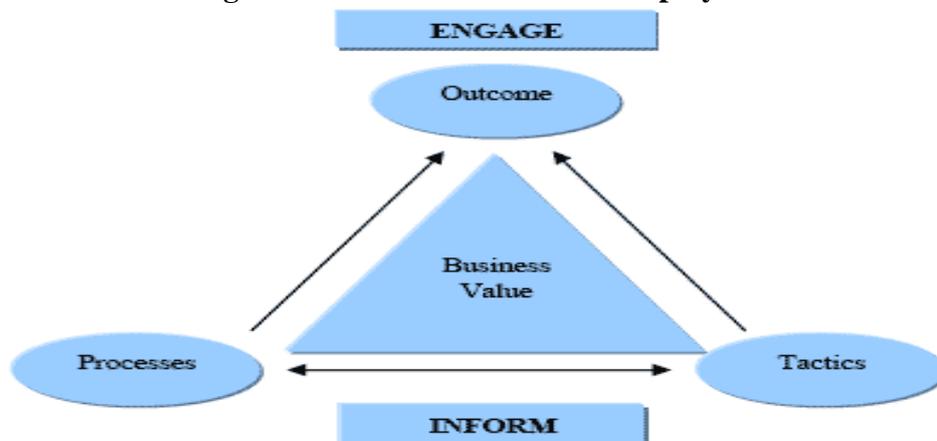
Model-5

Moorcroft (2006) discusses the restructuring that took place at the Royal Bank of Canada (RBC) in 2004. It was noted at that time that there was a need to engage rather than inform employees and thus better align their performance with the organisation's vision and business goals.

The strategy has four key objectives as illustrated in (Fig 5):

- i)** Help employees develop a better understanding of how what they do relate to the organisation's vision, strategies and goals;
- ii)** Create a more dynamic and interactive communication environment that involves employees in thinking about and understanding how they can influence business results;
- iii)** Ensure employees are getting the information they need to help frame and guide their day-to-day decisions; and
- iv)** Promote and recognise the desired behaviours and outcomes in communication.

Figure 5: RBC's new model of employee communication



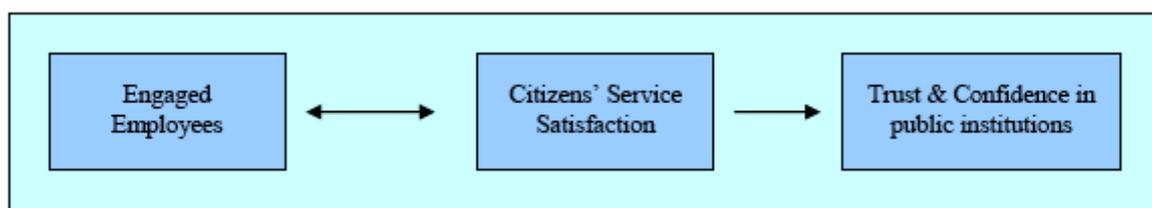
Source: Moorcroft (2006)

Moorcroft notes that which to inform employees, or create awareness, of company news and objectives, focused the 'old' model on developing tactics and methods. However, the new model is based on engaging employees in the communication process in order to achieve the desired outcomes and thus build the business value.

Model-6

Heintzman and Marson portrays that the private sector has, for over a decade, documented the links between employee engagement and client satisfaction, and between client satisfaction and bottom line financial results. The authors note that the third element (the bottom line) cannot be transferred directly to the public sector but based on research on the link between public service outcomes and the public's rating of overall government performance, they suggest the following public service value chain (Fig 6):

Figure 6: Heintzman and Marson's (2006) public sector value chain



Source: Heintzman and Marson (2006)

Heintzman and Marson suggest that by understanding the drivers of engagement and the link between engagement and performance of the institution, this tool can be used across public sector management to make significant improvements in employees' work and in the overall performance and perception of the public sector.

3. Drivers of Employee Engagement

HR professionals and consultants have a 'gung ho' attitude to ambiguity and most to be convinced of the importance of engagement as a major contributor to organisational performance and the bottom line (Laura Luisis-Lynd and Piers Myers). To succeed in engaging the work force essentially, there have to be some effective drivers. Engagement does not just depend on the organisation. Alfes et al., Identify the two most important 'drivers' of engagement as the meaningfulness of work and employee voice (i.e. being able to feed views upwards). Organizations drive engagement by proactively leveraging three

sources of influence for change: employees, leaders, and organizational systems and strategies.

The Conference Board found that 26 different drivers of engagement were proposed in 12 largely consultancy based studies of engagement. The most commonly reported drivers were trust and integrity; the nature of the job; the line-of-sight between individual performance and company performance; career growth opportunities; pride in the company; relationships with co-workers/team members; employee development and the personal relationship with one's manager.

Research conducted by IES in 2004 (Robinson et al.,) found considerable variation in the views of authors in what drives engagement and pointed out that 'there is no easy answer as far as engagement is concerned – no simple pulling of one or two levers to raise engagement levels'. Kahn^{*****} (1990) found that the presence of three psychological conditions influenced people to personally engage in their work and the absence of which encouraged disengagement. These are meaningfulness, safety and availability.

Having gone through the different EE models meticulously, specific to the public sector, the following 10 drivers of EE have been identified and selected for the study to assess the engagement levels of the employees in the study area. Although engagement levels differ from industry to industry, some drivers are central to the employee engagement.

1. Shared Vision, Values and Information (SVVI)
2. Transformational Leadership (TL)
3. Corporate Culture and Open Communication (CC&OC)
4. Trust / Respect (T/R)
5. Work Environment / Ethical Culture (WE/EC)
6. Decision Making and Information Dissemination (DM&ID)
7. Team Work (TW)
8. HR Practices (HRP)
9. Recognition and Reward / Motivation (R&R/M)
10. Empowerment / Satisfaction and Involvement (E/S&I)

These drivers of employee engagement have been selected after conducting exhaustive review of research on literature and considering different EE models in vogue. This apart, respondents' perspective in respect of their immediate manager and his leadership style has been gauged by adopting managerial grid.

FIG 7: SELECT DRIVERS OF EMPLOYEE ENGAGEMENT



I. Shared Vision Values and Information (SVVI)

According to the new business wisdom, the main goal of a company is to create social values, and the fundamental task of the management is to create a competitive advantage for the company. Organizational intellectual capital is composed in its ultimate essence of knowledge, intelligence and values. Each of these components represents integrated results of the individual contributions of all employees (Bratianu). These values can be communicated as an independent statement or as a component of the mission statement. A set of beliefs and values that become embodied in an ideology or organizational philosophy thus can serve as a guide and as a way of dealing with the uncertainty of intrinsically uncontrollable or difficult events” (Schein).

II. Transformational Leadership (TL)

Transactional and transformational leadership has been of great interest to many researchers in the current era. Adopting either transformational and transactional leadership behavior helps in the success of the organization (Laohavichien et al.). Transformational leaders alter the beliefs and attitudes of followers and inspire the subordinates in their own interests parallel with the betterment of the organization and Transformational leadership is also based on four dimensions such as charisma, communication, intellectual stimulation and individualized consideration (Burns, 1978). In the present era of discontinuity, it need not necessarily be over-emphasized that transformational leadership has become the most essential component for the organization to continue be contemporary, relevant, grow, diversify and sustain.

III. Corporate Culture and Open Communication (CC&OC)

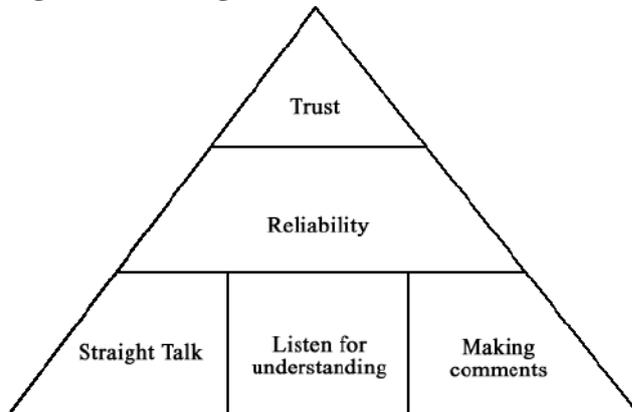
Corporate culture, sometimes called organizational culture, is defined as “a set of values, beliefs, and norms of behavior shared by members of a firm that influences individual employee preferences and behaviors” (Besanko, et al.). A culture can be considered strong if norms and values are widely shared and intensely held throughout organization (O’Relly and Chatman). Corporate culture has these three characteristics; it is hard to imitate; it disappears with the destruction of the organization; it is built through the member’s learning and the education given to them (Shinichi Hirota et al.). A corporate culture based on cooperative – rather than opportunistic– behaviour among employees is a source of sustainable competitive advantage in dynamic business environments (Barney; Rob and Zemsky).

IV. Trust and Respect (TR)

As in any relationship, trust is among the essential traits that keep commitment and engagement strong. The employee – employer relationship is no different. Relationships evolve over time into trusting, loyal and mutual commitments as long as the parties abide by certain “rules” of the exchange (Saks 2006). Trust is highly valued and can only be built up over time, but can be lost quickly.

The trust triangle was developed by Dr. John Carter, at the Gestalt Institute and can be used by organizations as a guide to building trust. The first component of the triangle is straight talk. Moving to the right along the base of the triangle, the next component is listening for understanding. By focusing closely on listening, more information is exchanged between the employer and employee and there is an increase in the level of trust in the sender by the receiver. Making commitments is the third element in the foundation of the triangle, as most importantly, “trust is built when commitments are kept” (Axelrod).

Figure 8: Triangle of Trust



It is obvious that trust lies in the hands of the organizations' leadership and management. In order to build trust within the organization it is necessary to ensure that these individuals are not only personally involved in the organization, but that they also submit themselves to the same vulnerabilities and risks as their employees (Axelrod).

V. Work Environment and Ethical Culture (WE/EC)

The ethical culture of an organization can be defined as those aspects of the perceived organizational context that impede unethical behavior (Treviño & Weaver). The ethical culture represents the informal control system of an organization (Murphy), whereas, for example, an ethics program represents parts of the formal control system of an organization (Ferrell, Thorne LeClair, & Ferrell). The empirical research conducted by Kaptein found that unethical behavior occurred due to the absence of a clear normative framework in the organization, which left managers and employees to rely on their moral intuition and good judgment.

VI. Decision Making and Information Dissemination (DM&ID)

Cyert *et al.*, imply that management is a series of decision making processes and assert that decision making is at the heart of executive activity in business. When employees participate in making decisions, they take feel more engaged in the organization. Decision-making needs to be pushed down to the lowest possible level. Ham and Hill argue that the study of decision-making should concentrate on analysing three areas: the process by which decisions are made; the distribution of power; and the assumptive worlds of key participants in the decision-making process. **Decision-making** is one of the most critical reoccurring responsibilities that managers face in their company.

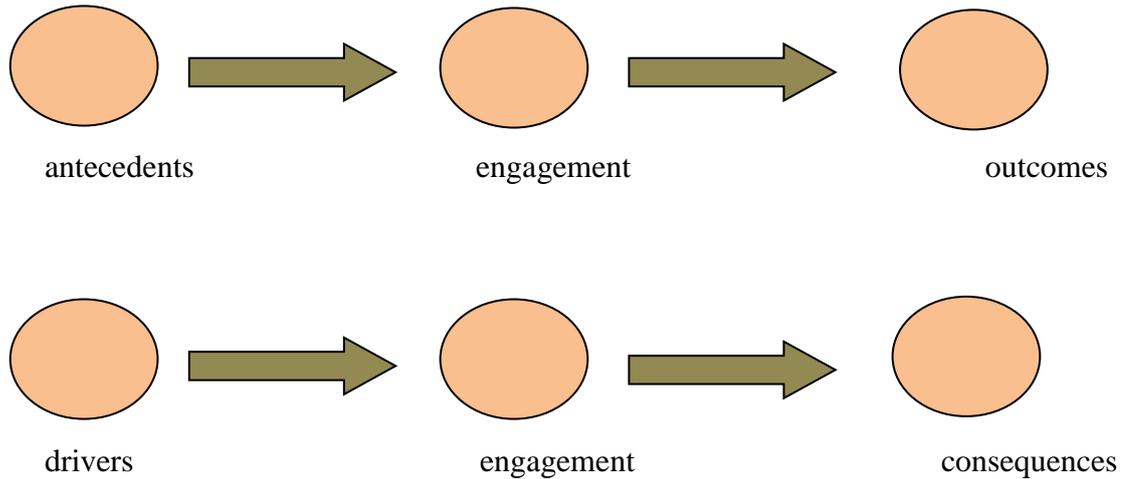
VII. Team Work (TW)

Teamwork, cooperation, and helpfulness between workers can be of substantial value to a firm. There are many examples supplementing the argument that workers with complementary skills can increase output and productivity by helping each other on individual tasks. Similarly, communication and the sharing of relevant information between different workers or work groups often greatly enhance the efficiency of production. While cooperation between workers is beneficial to the firm, the exertion of cooperative effort is usually costly to a worker. Moreover, it is typically hard to identify, let alone to verify, whether or not a worker helped a co-worker or shared information. Hence, incentives for cooperation are difficult to provide. Unless workers are intrinsically motivated, firms therefore often face inefficiently low levels of worker cooperation (Michael Kosfeld and Ferdinand von Siemens).

decision making downward to improve responsiveness and performance and to increase member commitment and satisfaction.

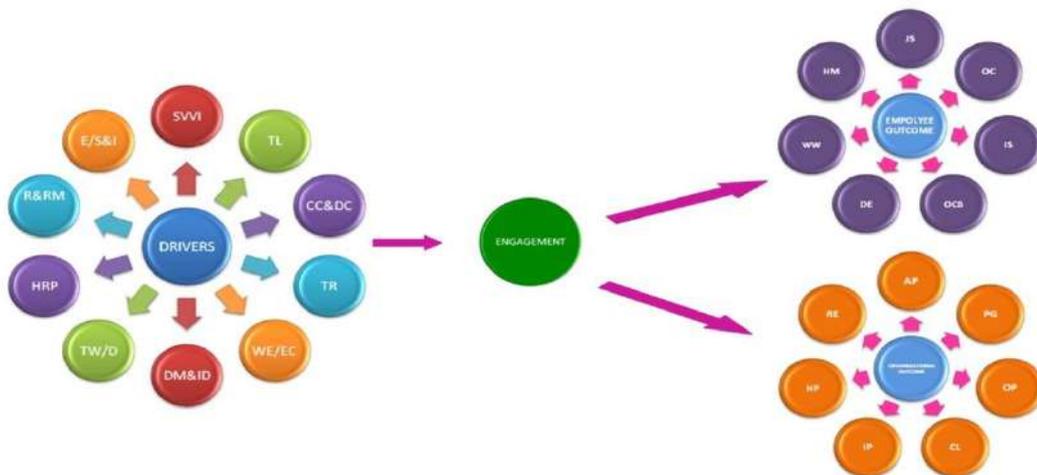
The basic structure of the proposed model positioned engagement as a mediator between drivers and outcomes (or its antecedents and consequences), as illustrated in figure.

Figure III.9 The basic structure of the proposed engagement model



The terms 'drivers' and 'outcomes' are predominantly used in this thesis as these labels depict the function of the corresponding latent variables. These driver categories have been selected based on initial observations of VSP's policies and operational processes. A total of ten driver variables have been included in the proposed model (see figure). The engagement variable positioned in the middle of the model was based on Hewitt Associate's engagement definition which included behavioural, emotional, and intellectual engagement. A number of factors determined the outcome variables on the right side of the model. Both Employee outcomes and organisational outcomes have been included in the proposed model as shown below.

Figure: Outcomes of Engagement



Employee Outcomes		Organizational Outcomes	
JS	Job Satisfaction	AP	Advocacy of Organization
OC	Organizational Commitment	PG	Public Good
IS	Intention to Stay	OP	Organizational Performance
OCB	Organizational citizenship behaviour	CL	Customer Loyalty
DE	Discretionary Efforts	IP	Increased Productivity
WW	Willingness to work	HP	High Profitability
HM	High Morale	RE	Retention of Employees

The ten drivers, combined are predicted to drive engagement, which, in turn, influences the engagement related outcomes. When applying the theory to the proposed model, the engagement drivers were perceived as motivating and engaging (if job resources were adequate), or exhausting and disengaging (if job demands were excessive). Therefore, in order to generate optimal levels of engagement, not only did certain drivers need to be present, but they need to function in a balanced way.

References

1. Gemma Robertson-Smith and Carl Markwick; Employee Engagement: A review of current thinking; Institute for Employment Studies; University of Sussex Campus
2. David MacLeod Nita Clarke; Engaging for success: enhancing performance through employee engagement; A report to Government
3. Kahn, W.A. (1990) 'Psychological conditions of personal engagement and disengagement at work', *Academy of Management Journal*, Vol 33, pp692-724.
4. Diamond, M.A. and Allcorn, S. (1985) 'Psychological dimensions of role use in bureaucratic organisations', in Kahn, W.A. (1990) 'Psychological conditions of personal engagement and disengagement at work', *Academy of Management Journal*, Vol 33, pp692-724.
5. Slater, P.E. (1966) *Microcosms*. New York, Wiley in Ferguson, A. (2007) 'Employee engagement: Does it exist, and if so, how does it relate to performance, other constructs and individual differences?' [online] Available at: <http://www.lifethatworks.com/Employee-Engagement.prn.pdf> [Accessed 20th June 2007]
6. Smith, K.K. and Berg, D.N. (1987) *Paradoxes of Group Life*. San Francisco, Jossey-Bass.
7. Freud, S. (1922) in Ferguson, A. (2007) 'Employee engagement: Does it exist, and if so, how does it relate to performance, other constructs and individual differences?' [online] Available at: <http://www.lifethatworks.com/Employee-Engagement.prn.pdf> [Accessed 20th June 2007]
8. Merton, R.K. (1957) *Social Theory and Social Structure*. New York, Free Press of Glencoe in Ferguson, A. (2007) 'Employee engagement: Does it exist, and if so, how does it relate to performance, other constructs and individual differences?' [online]

Available at: <http://www.lifethatworks.com/Employee-Engagement.prn.pdf> [Accessed 20th June 2007]

9. Alderfer, C.P. (1972) *Human needs in organisational settings*. New York, Free Press of Glencoe.
10. Maslow, A. (1954) *Motivation and Personality*. New York, Harper and Row.
11. Robinson, I. (2006) *Human Resource Management in Organisations*. London, CIPD.
12. David MacLeod Nita Clarke; *Engaging for success: enhancing performance through employee engagement; A report to Government*
13. "ibid"
14. Konrad, A.M. (2006) 'Engaging employees through high-involvement work practices', *Ivey Business Journal*, March/April, pp1-6.
15. Chartered Institute of Personnel and Development (CIPD) (2006c) *Working Life: Employee attitudes and engagement 2006* Research Report.
16. Robinson, D., Perryman, S. and Hayday, S. (2004) *The drivers of employee engagement*. Brighton: Institute for Employment Studies.
17. Penna (2007). *Meaning at Work Research Report*. Available online from <http://www.epenna.com/newsopinion/research.aspx> [retrieved on 6 March 2007]
18. Schmidt, F (2004) *Workplace well-being in the public sector – a review of the literature and the road ahead* for the Public Service Human Resources Management Agency of Canada. Ottawa: PSHRMA. Available online at <http://www.hrma-agrh.gc.ca/hr-rh/wlbpseeoppfps/documents/WorkplaceWell-Being.pdf> [retrieved on 6 March 2007]
19. Moorcroft, D Realising RBC's new vision for employee communications, IN *Strategic Communication Management* Volume 10, Issue 6, October/November 2006. Available online at http://www.melcram.com/articles/vision_at_RBC.shtml [retrieved on 6 March 2007]
20. Moorcroft, D Realising RBC's new vision for employee communications, IN *Strategic Communication Management* Volume 10, Issue 6, October/November 2006. Available online at http://www.melcram.com/articles/vision_at_RBC.shtml [retrieved on 6 March 2007]
21. Heintzman, Ralph and Marson, Brian (June/July 2006) *People, service and trust: links in the public sector service value chain*. Canadian Government Executive. Available online at http://www.hrma-agrh.gc.ca/veo-ve/publications/atricle_e.asp [6 March 2007]
22. Laura Luisis-Lynd and Piers Myers; *How, why and when are organisations today "engaging with engagement"?* London South Bank University.
23. Alfes, K., Truss, C., Soane, E. C., Rees, C. &Gatenby, M. (2010) *Creating an Engaged Workforce: Findings from the Kingston Employee Engagement Consortium Project*. Retrieved 24 May 2010,
24. Conference Board (2006), *Employee Engagement: A review of current research and its implications*, The Conference Board
25. Robinson, D., Perryman, S., &Hayday, S. (2004). *The drivers of employee engagement*. *Institute for Employment Studies*, report 408, ISBN: 978-1-5184-336-7.
26. Kahn, W.A. (1990), 'Psychological conditions of personal engagement and disengagement at work', *Academy of Management Journal*, Vol 33, pp692-724.

27. Bratianu, C. (2008) A dynamic structure of the organizational intellectual capital, in: Naaranoja, M. (ed.) *Knowledge management in organizations*, pp. 233-243, Vaasan Yliopisto, Vaasa
28. Schein, E.H. (2004) *Organizational culture and leadership*. 3rd edition. San Francisco: Jossey-Bass. A Wiley Imprint
29. Laohavichien, T., Fredendall, L., and Cantrell, R., 2009. "The effects of transformational and transactional leadership on quality improvement", *The Quality Management Journal*, Vol. 16, No. 2, pp. 7-24
30. Burns, J., 1978. Burns, J.M. (1978), *Leadership*, New York: Harper & Row.
31. Besanko, D., D. Dranove, and M. Shanley (2000), *Economics of Strategy* (2nd ed.), John Wiley and Sons, Inc.
32. O'Reilly, C. A. and J. A. Chatman (1996), "Culture as Social Control: Corporations, Culture and Commitment," in B. M. Staw and L. L. Cummings (eds.), *Research in Organizational Behavior* 18, JAI Press.
33. Shinichi Hirota et al., March 2007; Does Corporate Culture Matter? An Empirical Study on Japanese Firms; RIETI Discussion Paper Series 07-E -030.
34. Barney, J.B., 1986. Organizational Culture: Can It Be a Source of Sustained Competitive Advantage? *The Academy of Management Review* 11 (3), 656-665.
35. Rob, R., Zemsky, P., 2002. Social Capital, Corporate Culture, and Incentive Intensity. *RAND Journal of Economics* 33 (2), 243-257.
36. Saks, A. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*. 21 (7): 600 – 619.
37. Axelrod, R. (2000). *Terms of engagement: changing the way we change organizations*; San Francisco, CA: Berrett-Koehler Publications.
38. "i-bid"
39. Treviño, L. K., & Weaver G. R. (2003). *Managing ethics in business organizations: Social scientific perspectives*. Stanford: Stanford University Press.
40. Murphy, P. E. (1988). Implementing business ethics. *Journal of Business Ethics*, 7, 907-915.
41. Ferrell, O. C., Thorne LeClair, D., & Ferrell, L. (1998). The Federal Sentencing Guidelines for Organizations: A framework for ethical compliance. *Journal of Business Ethics*, 17, 353-363.
42. Kaptein, M. (2008). Developing and testing a measure for the ethical culture of organizations: The corporate ethical virtues model. *Journal of Organizational Behavior*, 26 (forthcoming).
43. Cyert, R.M., Simon, H.A. and Trow, D.B. (1956) "Observations of a business decision." *The Journal of Business*, 29(4), 237-248.
44. Ham C and Hill M (1993) *The policy process in the modern capitalist state*. Sussex: Wheatsheaf Books
45. Michael Kosfeld and Ferdinand von Siemens; June 2007; Competition, Cooperation, and Corporate Culture; Institute for Empirical Research in Economics; University of Zurich; Working Paper Series; ISSN 1424-0459
46. Mowday, R.T., 1998, Reflections on the study and relevance of organizational commitment, *Human Resource Management Review* 8 (4), 387-401.

47. Curran, J., Kitching, J., Abbott, B. and V. Mills, 1993, Employment and Employment Relations in the Small Service Sector Enterprise, Small Business Research Centre, Kingston Business School.
48. Schuler, R.S. and S.E. Jackson, 1987, Linking competitive strategies with human resource management practices, *Academy of Management Executive* 1 (3), 209-213.
49. Lengnick-Hall, C.A. and M.L. Lengnick-Hall, 1988, Strategic HRM: a review of the literature and a proposed typology, *Academy of Management Review* 13 (3), 454-470.
50. Youndt, M.A., S.A. Snell, J.W. Dean Jr. and D.P. Lepak, 1996, Human resource management, manufacturing strategy, and firm performance, *Academy of Management Journal* 39 (4), 836-866.
51. Kok, J.M.P. de and L.M. Uhlaner, 2001, Organization context and human resource management, *Small Business Economics* 17, 273-291.
52. Ram, M., 1999, Managing autonomy: employment relations in small professional service firms, *International Small Business Journal* 17 (2), p. 13-30.
53. GUEST, D. E. 1991. Personnel Management: The end of Orthodoxy? *British Journal of Industrial Relations*. 1991, vol. 3, s. 137-156.
54. Blessing White, 2008; The State of Employee Engagement, North American Overview; Version 04/08
55. Macey, W., & Schneider, B. (2008). The Meaning of Employee Engagement. *Industrial and Organizational Psychology*, 1(1), 3-30.
56. Wellins, R., & Concelman, J. (2005). Creating a culture for engagement. Workforce Performance Solutions (www.wpsmag.com). Retrieved, October 2, 2008,
57. Brief, A. P. & Weiss, H. M. (2002). Organizational behavior: Affect in the workplace. *Annual Review of Psychology*, 53, 1, 279-308.
58. Salanova, M., Agut, S. & Peiro, J. M. (2005). (p.1218); Linking organizational resources and work engagement to employee performance and customer loyalty: The mediation of service climate. *Journal of Applied Psychology*, 90(6), 1217-1227.
59. Cummings T.G., Worley, C. (2005). *Organizational Development & Change*. Employee Involvement. (306-330). Ohio: South-Western part of the Thomson Corporation

A Study on the Effectiveness of Pilgrimage on the Standard Of Living of People in Rural Area

Mrs. Leny Michael*

Dr. Antony Joseph**

Abstract

Tourism can play a vital role in enhancing the standard of living of the people of the tourism developed areas. The standard of living of a community largely depend upon the earnings of the people, infrastructures available, mode of employment, regional development etc. Tourism is a vibrant and economically useful activity. Tourists not only bring money into a locality, but also carry a strong and visible lifestyle, dress code, food habits, merry making manners, new cultural and social habits, etc. The local people can imbibe a lot from the tourists. They can study and adopt better techniques of life from the tourists who invariably have a better standard of living.

Introduction

Pilgrimage tourism is being recognized as a prime industry in most parts of the world for the purpose of earning maximum foreign exchange. Social significance of pilgrimage tourism cannot be said of less importance. Pilgrimages are not only a destination only for our religious faith but they also strengthen the economic development of the country. Pilgrimage brings forth benefits, both quantifiable (such as additional employment options, rise in property value, and enhanced public revenue through taxes) and non-quantifiable (such as increased use of public utility services, more entertainment options, general development of the region, and rise in the standard of living).

Sabarimala a famous pilgrimage destination of Kerala, situated in the Pathanamthitta district, in the Valley of Sahyadri Mountains is a prominent holy place in Kerala. Erumely is the major transit point of the Sabari Pilgrimage. "Pettathullal", the famous ritualistic ceremony associated with Sabari Pilgrimage take place at Erumely. It is compulsory and customary that the devotees on their first pilgrimage (Kanni Ayyappan) should visit Erumely. This exodus of pilgrims into a small town like Erumely for a short duration of two months brings forth enormous changes in and around Erumely during the pilgrim season. The pilgrim season (during December-December-January) there is a paradigm shift in the occupational pattern of the households. Some of them are directly involved in seasonal business activities, like selling ritual articles, selling coconuts, vessels, snacks, operating motor workshops, STD booths etc. Certain others earn income by letting out their surroundings for parking, business purposes, or making profit by providing toilets, bathroom facility, *virivakkal* facility etc. Besides the households, business people are also widely involved in pilgrim related activities

Significance of the study

Tourism can play a vital role in enhancing the standard of living of the people of the tourism developed areas. The standard of living of a community largely depend upon the earnings of the people, infrastructures available, mode of employment, regional

* Research Scholar, Bharathiyar University, Coimbatore

** HOD, Commerce Department, Hentry Baker College, Melukavumattam

development etc. Tourism is a vibrant and economically useful activity. Tourists not only bring money into a locality, but also carry a strong and visible lifestyle, dress code, food habits, merry making manners, new cultural and social habits, etc. The local people can imbibe a lot from the tourists. They can study and adopt better techniques of life from the tourists who invariably have a better standard of living.

Objectives of the study

The major objectives of the study are;

1. To investigate and identify the various nature of pilgrim related business in the rural area.
2. To identify the effects of pilgrimage on economic status of households among the respondents of beneficiary and non-beneficiary.
3. To understand the various reasons for rendering pilgrim related services.
4. To analyze the rate of effects of pilgrimage on standard of living of people involved in tourism activities on the basis of various criteria.

Hypothesis

1. Ho; There is no difference in the economic status of households among the beneficiary and non-beneficiary of pilgrimage tourism
2. Ho; there is no effect of pilgrimage on standard of living of people in rural area.

Sampling and Data Collection

This research is empirical in nature and the samples are selected on simple random sampling method. The area selected for the study is Erumely local community, which is the most affected locality of Sabarimala pilgrimage. The locality is within 3 km from the town. The total number of sample selected is 90. Out of the total number of sample 60 numbers are beneficiaries of the pilgrimage and 30 numbers are non beneficiaries. The structured interview schedule is used to collect the data from the respondents and the observation method is used to identify the various economic activities taking place in the locality.

Tools and Techniques used for the study

1. Percentage analysis is done to identify the major effects of pilgrimage in the standard of living of people in the rural area.
2. Hypothesis testing is used to find out the effects of pilgrimage on economic status of households in the locality and also analyze the overall effects of pilgrimage in the standard of living of the people in rural area.

Data Analysis and Interpretation

The following are the details of analysis regarding the effectiveness of pilgrimage on the standard of living of the people in rural area.

1. Personal Details regarding respondents

Table No.1: Personal Details regarding respondents

Personal Characteristics	Description	No. of Respondents	Percentage
Category	Beneficiary	60	66.67
	Non-beneficiary	30	33.33
	Total	90	100
Gender	Male	68	75.56
	Female	22	24.44
	Total	90	100
Age	below 30 Years	16	17.78
	31-45 Years	26	28.89
	46 - 60 Years	29	32.22
	Above 60 years	19	21.11
	Total	90	100
Education	School	19	21.11
	Pre-degree	33	36.67
	Degree	30	33.33
	PG & Above	8	8.89
	Total	90	100

(Source: Primary data)

Interpretation

The above table shows that the major respondents are males. The majority of the respondents come under in the age limit of 46- 60 years range. Most of the respondents are pre-degree holders.

2. Rating of Households and their involvement in Sabarimala Pilgrimage

Classification of respondent's participation in pilgrim related economic activities based on the locality

Table No.2: Respondents based on participation in pilgrim related activities

Nature of Economic	No. of respondents	Percentage
Direct season business	31	51.67
Indirect season business	15	25
Permanent Business	14	23.33
Total	60	100

(Source: primary Data)

Interpretation

The above table mentioned that the respondents involved in various nature of business. The majority of respondents doing the direct seasonal business activities and all other are doing indirect seasonal business and permanent business. Only 23.33 % of the respondents are involved in the permanent business.

3. Nature of business and the number of respondents

The nature of business divided into three categories. They are direct season business, indirect season business and permanent business. The following tables shows the different activities related with the different nature of business.

3.1 Direct Season Business

The table No. 3 mentions the different activities involved in direct season business

Table No.3: Respondents based on direct season business activities

SI.No.	Activities	No. of Respondents	Percentage
1	Selling Ritual Articles	5	16.1
2	Petty shops	4	12.9
3	Tea /coffee shops	6	19.4
4	Studio	2	6.5
5	Coconut sale	6	19.4
6	Pineapple sale	3	9.7
7	Temporary police	2	6.5
8	Taxi service	2	6.5
9	Workshop	1	3.2
10	Others (specify)	0	0
	Total	31	100

(Source: primary Data)

Interpretation

The table reveals that 19.4 % of the respondents are doing the coconut sale and coffee shop. 12.9 % of the people are doing the petty shop business.

3.2 Indirect Season Business

The table No. 4 mentions the different activities involved in indirect season business

Table No.4: Respondents based on indirect season business activities

SI.No.	Activities	No. of Respondents	Percentage
1	Rent	1	6.7
2	Parking, boarding and lodging	8	53.3
3	Toilet facility	0	0
4	Drinking water	1	6.7
5	Virivakkal	5	33.3
6	All the above	0	0
7	Others (specify)	0	0
	Total	15	100

(Source: primary Data)

Interpretation

The above table shows that majority of the respondents are involved in the activities of parking and accommodation related activities. Then the people are doing virivakkal business.

3.3 Permanent Business

The table No. 5 mentions the different activities involved in permanent business

Table No.5: Respondents based on permanent business activities

SI.No.	Activities	No. of Respondents	Percentage
1	Grocery Shop	0	0
2	Medical Shop	1	7.1
3	Hotel / Restaurant	3	21.4
4	Bakery / cool bars	1	7.1
5	Petty Shops	3	21.4
6	Electrical / hardware	1	7.1
7	Textiles	1	7.1
8	Stationary	1	7.1
9	Others	3	21.4
	Total	14	100

(Source: primary Data)

Interpretation

The table depicts that 21.4 % of the respondents are doing the hotel or restaurant business and petty shops. Others are doing the involved in other business

4. Experience of house hold rendering services to pilgrims on the basis of their nature of business

Table No.6: Experience of house hold rendering services to pilgrims

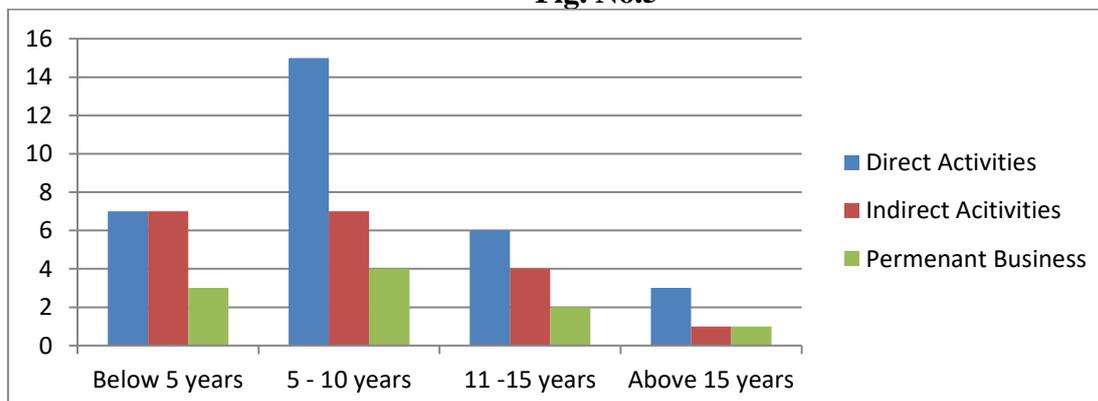
Activity	Below 5 years	5 - 10 years	11 -15 years	12-20 years	Above 20 years	Total	Percentage
Direct Business	7	13	6	3	2	31	51.7
Indirect Business	7	5	4	2	1	19	31.7
Permanent Business	3	2	2	2	1	10	16.7
Total	17 (28.33%)	20 (33.33%)	12 (20%)	7 (11.6%)	4 (6.067%)	60 (100%)	100

(Source: primary Data)

Interpretation

The above table reveals that the experience of various household involved in the pilgrim related business on the basis of the nature of business. 33.33% of the respondents having 5-10 years experience in pilgrim related business and 28% having below 5 years experience. It means that the more people are attracted to do the pilgrim related business in recent days.

Fig. No.5



5. Reason for rendering pilgrim related services

The following table shows the reasons for rendering pilgrim related services.

Table no. 7: Reason for rendering pilgrim related services

Reason	No. of Respondents	Percentage
More profitable	36	60
More convenience	14	23.33
Other Reasons	10	16.67
Total	60	100

(Source: primary Data)

Interpretation

The above table reveals that 60 % of the respondents say that they are involved pilgrim related services because of more profitable. Only 14% says that it is more convenient.

6. Respondent's Economic Status of household

The respondent's economic status of house hold valued on the basis of the types of house, types of vehicle and value of house hold amenities.

Table No.8: Economic Status of Household

Items	Description	Beneficiary		Non-beneficiary	
		No. of house holds	Percentage	No. of house holds	Percentage
1.Type of House	Below 1000 Sq.ft	6	6	13	43.33
	1000-2000 Sq.ft	12	20	12	40
	1000-3000 Sq.ft	25	43.33	4	13.33
	Above 3000 Sq.ft	17	28.33	1	3.33
	Total	60	100	30	100
2.Type of Vehicle	Nil	9	15	12	40
	Low Valued	15	25	8	26.67
	Average Valued	19	31.67	7	23.33
	High Valued/Luxuary	17	28.33	3	10
	Total	60	100	30	100
3.Value of House hold amenities	Below 50000	8	13.33	14	46.67
	50000-100000	14	23.33	8	16.67
	100000-200000	18	30	7	23.33
	Above 200000	20	33.33	1	3.33
	Total	60	100	30	100

(Source: Primary data)

Interpretation

The table shows that there is a good economic status among the households involved in the pilgrim related activities than the non-beneficiary.

7. Effect of pilgrimage on the standard of living of people

The following tables given a summarized view of the effect of the pilgrimage on the standard of living of the people involved in tourism related activities.

Table No. 9 Effect of pilgrimage on the standard of living of the people involved in tourism activities

Items	Description	No. of Persons	Percentage
1. Significant change in the mode of life and attitude of the local people	Very High	21	35
	High	17	28.3
	Moderate	15	25
	Low	5	8.3
	Very Low	2	3.3
	Total	60	100
2. Improved food habit	Very High	29	48.3
	High	20	33.3
	Moderate	8	13.3
	Low	3	5
	Very Low	0	0
	Total	60	100
3. Improved clothing	Very High	12	20
	High	16	26.67
	Moderate	19	31.67
	Low	9	15
	Very Low	4	6.67
	Total	60	100
4. Improved Saving Pattern	Very High	16	26.67
	High	22	36.67
	Moderate	18	30
	Low	4	6.67
	Very Low	0	0
	Total	60	100
5. Extent of modern amenities in your locality compared to the nearby places	Very High	17	28.33
	High	20	33.33
	Moderate	18	30
	Low	5	8.33
	Very Low	0	0
	Total	60	100
6. Significant cultural change among the local people due to the interpersonal relationship with the pilgrims	Very High	8	13.33
	High	21	35
	Moderate	16	26.67
	Low	12	20
	Very Low	3	5
	Total	60	100
7. Overall opinion about the impact of pilgrim tourism on improving the standard of living of the people involved in the tourism activities	Very High	20	33.33
	High	16	26.67
	Moderate	14	23.33
	Low	7	11.67
	Very Low	3	5
	Total	60	100

(Source: primary Data)

8. Overall opinion about the effectiveness of pilgrimage on the standard of living of people involved in tourism related activities

Table No. 10 mention the overall opinion of the people regarding the infrastructure development

Table No. 10: Overall opinion about the effect of pilgrimage on standard of living of people

Description	No. of Persons	Percentage
Very High	18	30
High	22	36.67
Moderate	10	16.67
Low	7	11.67
Very Low	3	.05
Total	60	100

(Source: primary data)

Interpretation

The above table described that 32 % of the people having good opinion regarding the overall improvement in infrastructure development in Erumely local community by the impact of Sabarimala pilgrimage.

Hypothesis Testing

Ho; There is no difference in the economic status of households among the beneficiary and non-beneficiary of pilgrimage tourism.

Ho; There is a difference in the economic status of households among the beneficiary and non-beneficiary of pilgrimage tourism.

Table No.11: Z value Table

Items	Mean		Standard deviation		Z value	Table value @ 5%level of significance
	Beneficiary	Non-beneficiary	Beneficiary	Non-beneficiary		
1.Type of House	15	7.5	3.74	3.2	3.06	1.96
2.Type of Vehicle	15	7.5	4.58	3.6	2.58	1.96
3.Value of House hold amenities	15	7.5	5.71	4.61	2.04	1.96

Interpretation

The output from the Z test shows that the The calculated values are (3.06, 2.58, 2.04) greater than the table value (@5% level of significance, two tailed test (1.96, degrees of freedom here is α) .So we reject Ho, it means we can conclude that there is a difference in the economic status of households among the beneficiary and non-beneficiary of pilgrimage tourism

Hypothesis Testing

Ho; There is no effects of pilgrimage on standard of living of people in rural area.

H1; There is an effects of pilgrimage on standard of living of people in rural area.

Table No. 12: Chi-Square Table

O	E	O-E	(O-E) ²	(O-E) ² /E
18	12	6	36	3
22	12	10	100	8.33
10	12	-2	4	0.33
7	12	-5	25	2.08
3	12	-9	81	6.75
60				20.5

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Chi-Square Value is =**20.5**

Degrees of Freedom (5-1) = 4

Table value (@5% significance level, Two tailed test) = 9.4877

Interpretation

The output from the Chi-Square test shows that the calculated value is (20.5) greater than the table value (9.4877) .So we reject Ho, it means that there is an effects of pilgrimage on standard of living of people in rural area.

Findings

1. The study reveals that the majority of the respondents are male and they are in middle aged
2. The majority of the respondents are involved in the direct seasonal business.
3. The range of experience of households rendering services to pilgrims shows that many people are attracted in this type of business recently
4. The major reason for rendering pilgrim related services is by the household is more profitable.
5. The study shows that there is a significant difference in the economic status of households among the beneficiary and non-beneficiary of pilgrimage tourism
6. The studies find out that there is a significant effects of pilgrimage on standard of living of people in rural area.

Suggestions

The study depicts that there should be an improvement needed in the extent of modern amenities in as locality compared to the nearby places.

Conclusion

The study reveals that there is a high impact of pilgrim tourism in the standard of living of people in the local community. The study shows that the households are benefited in the form of rent, wage/salary hiring charges and profit from business. There is a remarkable increase in the annual income of those families who are involved in the seasonal business activities. The total income of the respondents who are directly involved in pilgrim-related activities is higher than that of those who are indirectly involved. Thus, it is concluded that the pilgrim-related activities are a boon to those households who are involved in it.

Reference

1. Vijayaraj R, A study on community tourism and its impact In Kerala with special reference to Ernakulam district, IRACST- International Journal of Research in Management & Technology (IJRMT), ISSN: 2249-9563, Vol. 2, No.6, December 2012
2. Mrs.Mahalakshmvivekatesh&Dr.P. Stanley Joseph Michal Raj, Impact of tourism in india, International Journal of Scientific Engineering and Applied Science (IJSEAS) - Volume-2, Issue-1, January 2016.
3. MansouEsmailzaei&Mahinesmaeilzaei, The impacts of tourism industry on host community European Journal of Tourism Hospitality and Research Vol.1, No.2, pp.12-21, September 2013
4. Muganda Michael, community involvement and participation in tourism development in Tanzania (a case study of local communities in Barabarani Village, Mtowambu, arusha-Tanzania) , thesis ,2009
5. FatemeTohid Ardahaey, Economic Impacts of Tourism Industry, International Journal of Business and Management Vol. 6, No. 8; August 2011
6. A Case Study of Elephanta Caves, Matheran Hill Station, Janjira Fort and Palis Shri BallaleshwarGanesha, Economic, Socio-cultural and physical impacts of tourism.
7. François The indirect impact of tourism: an economic analysis – TED AFL Third Meeting of T20 Tourism Ministers Paris, France, 25 October 2011
8. H. Sud, “External Tourism and Its Positive Impact on Indian Economy”, South Asia Analysis Group, Paper-1799, May 2006
9. Auroubindo Ganesh , Dr. C. Madhavi, Impact of Tourism On Indian Economy - A Snapshot Journal of Contemporary Research in Management, Volume-1, No.1, 2 Jan - June 2007

Participative Management impact on Organizational Performance: *Just A Scan*

M.KETHAN*

Abstract

Human resources are the most important input for any Organization. Among the other inputs, the livable one is human for a fully automated machine requires one to switch on. Hence human resources are important in each and every aspect of an organization. In the post globalization era, the growth of service sector opened many employment avenues for people. As a result the retention of talented employees has become an eternal and challenging question to the HR practitioners. The authors of this conceptual paper subscribe to the view that by adopting participative management in the organization one can enhance the organizational performance and productivity and reduce the employee attrition rates. In this paper, we hypothesize the conceptual relationship of participative management to organization productivity, employee absenteeism, job satisfaction and employee retention based on the previous studies and proposes a model to be operationalized for further research keeping in view the benefits of adopting participative management in modern organizations in the knowledge society.

Keywords: Participative management, Organizational Productivity, Employee job Satisfaction, Employee Absenteeism and Employee Retention.

Introduction

Human capital is one of the most important assets in most businesses, and increasingly so in a knowledge society. Employees, from the top of the hierarchical structure to the bottom are the present and future of a company's potential success. A company needs to achieve maximum output out of its employees both physically and intellectually and be highly productive. The purpose of this review is to understand what role participative management in contributing to organizational productivity.

Participative management has been broadly adopted as a strategy in organizational development because most people believe that participative management not only encourages workers to identify with their duties, but also improves their own performance as well as organizational performance. Participatory management is the practice of making employees to participate in organizational decision making. In 1920s it grew out of the human relations movement and is based on some of the principles discovered by scholars doing research in management and organization studies, such as the Hawthorne Effect.

Overview of Participative Management

The father of the "Human Relations" movement, aka the "social man" era, "democratic management", or "participative management" is Elton Mayo (1880-1949), a Harvard professor trained in psychopathology who is most famous for the well-known "Hawthorne Studies", a 20-year experiment at a Western Electric plant in Cicero, Illinois. Since its origins with Elton Mayo's *The Human Problems of a Industrial Civilization* (1933) and Kurt Lewin's "Frontiers in Group Dynamics" (1947), a large and diverse literature has

* Asst. Professor, Dept. Of MBA, Koshy's Institute of Management Studies

been assembled on participative management, which includes employee involvement, industrial democracy, and stakeholder involvement. Interest in participative management has been persistent during this period, with periodic surges corresponding to the social, political, and economic issues of chronically low productivity in the 1960s and 1970s, and international challenges to U.S. industry and product quality in the 1980s and 1990s when worker motivation, productivity and innovativeness became priority issues. Recently, the focus has been on the relationship between participative management and the newer, organic and networked organizational forms, dramatically improved information and communication technology, and greater citizen involvement in organizational decision making.

Another study conducted by Addison, Kraft and Wagner (1993) showed works council did not have a positive impact on firm performance. Participative management in Taiwan (p.681). The findings of previous studies, which focus on the relationship between participative management and organizational performance, do not seem quite consistent. This may be because different forms of employee participation are associated with different outcomes (Cotton et al., 1988).

Many aspects of the organizational effectiveness and management literature, both public and private sector organizations have been subject to investigation regarding participative management and employee involvement, and there have been some instructive time-series studies on the extent of adoption and the organizational consequences of participative management practices (Lawler et al. 1986, 1992, 1998, 2001). In addition, there is a strong body of research on the relationships among aspects of organizational design, management practices, and worker characteristics pertinent to participative management and employee involvement.

Most scholars aver that participative management has a positive effect on organizational performance. They argue that participation can promote work motivation (Cable and FitzRoy, 1980) and organizational morale (Vanek, 1970; Horvat, 1982), which in turn will increase productivity.

Participative Management and Organization Performance:

Several organizational factors are expected to have effects on organizational performance. These factors are introduced into the model as control variables. The measurement of these factors is based on the following: type of organization (size and stream of operations), history of organization, financial status of company, employee orientation (age, number of employees, qualification and experience) and trade unions.

Seven indicators of organizational performance are employed. Three of them (turn overrate, mobility rate and absenteeism rate) are aggregated to behavioral outcome. Another set of three (revenue growth rate, market share, product value per employee and profit rate) are indexes of organizational achievement.

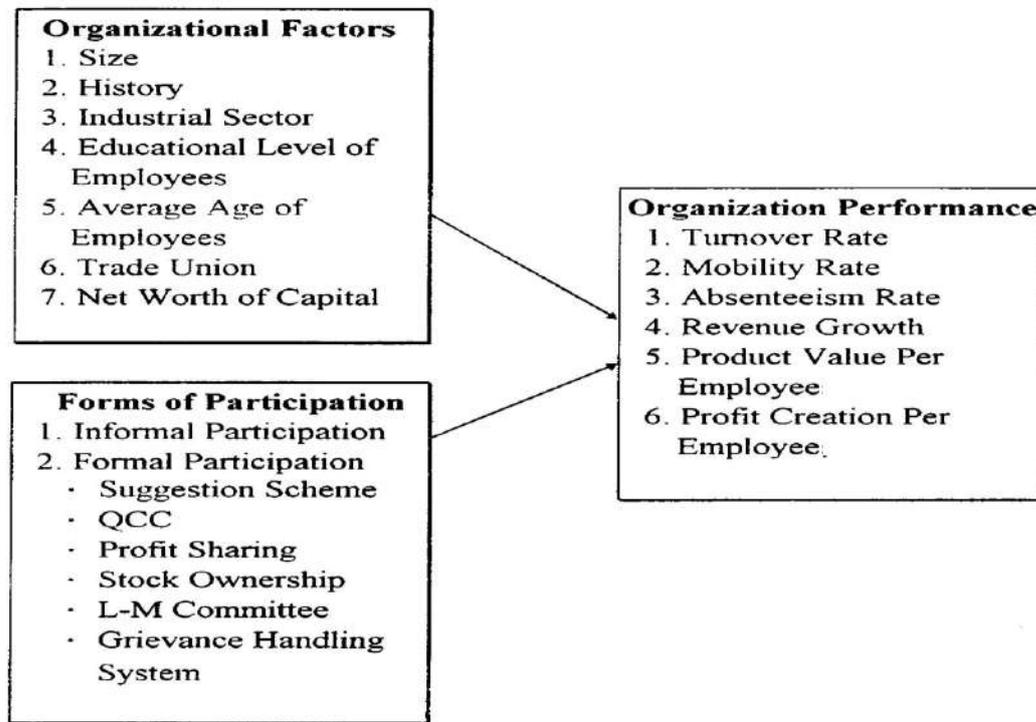


Fig: Relationship between Participative management over Organizational Performance

Table 1 Descriptive statistics for variables

Variable	Mean	Standard variance
1 Organizational performance		
1 Turnover rate (%)	26.234	29.359
2 Mobility rate (%)	51.250	43.709
3 Absenteeism (%)	1.317	3.148
4 Revenue growth rate (%)	18.205	101.741
5 Product value per employee (1,000 rs)	6735.970	43143.390
6 Profit creation per employee (1,000 rs)	169.711	436.105
2 Forms of employee participation		
1 Suggestion scheme	0.471	0.500
2 Quality control circle	0.364	0.441
3 Profit sharing	0.278	0.486
4 Employee stock ownership	0.367	0.500
5 Labour-Management committee	0.417	0.466
6 Grievance-handling system	0.269	0.444
7 Informal participation	2.707	0.424
3 Control variables		
1 Size (personnel)	519.289	1018.550
2 History (year)	21.543	17.210
3 Industrial sector (%)	21.543	17.210
4 Educational level of employee (%)	39.633	25.101
5 Average age of employees	33.672	4.761
6 Trade union	0.300	0.459
7 Net worth of capital (1,000,000 rs)	1179.420	2814.570

The descriptive statistics for variables in the model are illustrated in Table 1. Each form of employee participation represents its proportional implementation. The result shows that 'suggestion scheme' and 'stock-ownership plan' is the two most popular form of employee participation. Around 47.1 per cent of the responding firms replied that they have employee suggestion schemes and 46.7 per cent of them have an employee stock-ownership plan. Profit sharing and labour-management committee', secondarily to employee suggestion scheme and stock-ownership plan, are also welcomed. Their implementation rates are 37.8 per cent and 31.7 per cent respectively. Though the concept of the quality control circle is familiar to firms, its implementation rate (26.4 per cent) is not as high as expected. This may be because the practice requires a certain level of knowledge and skill in group dynamics. The institutionalization of grievance handling is less popular than other forms of participation. This may be because paternalism still dominates in the Indian management enterprise

As mentioned above, the variable of 'informal participation' contains eleven items indicating degree of employee participation in practice. The responses to the items are given on a scale of 1 ('strongly disagree') to 4 ('strongly agree'). The scores for each item are summed and averaged to sketch out an informal participation score. The average score of informal participation for the responding enterprise is 2.707.

These variables are measured as:

1. Turnover rate: proportion of employees resigning in the Particular year (quits/total employees)
2. Mobility rate: proportion of employees resigning and employed in that particular year ((quits + new hired)/total employees)
3. Absenteeism rate: annual working days missed per employee in that particular year (Exclude industrial disputes)
4. Revenue growth rate: (Present year revenue – Previous year revenue)/Present year revenue
5. Product value per employee: Present year revenue/number of employees in that particular year
6. Profit creation per employee: Particular year gross profit before tax/number of employee in that year.
7. Market Share: Companies total revenue/entire industry market value of that particular year.

Participative Management and Job Satisfaction

In this context the dependent variable is the job satisfaction and the independent variable is the Participation management. Job satisfaction comprises of many aspects as employee level, work load, salary, benefits provided by company, working environment, relationship with superior, subordinate interaction, leave system, career opportunities and etc., participative management makes an employee to be involved in decision making so that the employee feels satisfaction that company is ours and to make better decisions over the problem and becomes to the company.

Employee job satisfaction and participative management involves better organizational decision making and liable employees to the organization.

Participative Management and Absenteeism

Participative management requires employees to be involved in making some managerial decisions so that employees are indirectly associated to the organizational decision

hierarchy. Employee absenteeism causes due to the fact that if employee is not satisfied with organizational activities. Here if employee is making some decisions then he is involved and satisfied and get motivated to do the job thereby absenteeism reduces gradually. All employees are not liable to the company only the motivated and satisfied employees are liable to the company.

Participative Management and Employee Retention

In most organizations employee retention plays a keen role because recruiting, placing, training, appraising, compensating etc., are involved in employment. If an employee gets away from company the amount spend on the employee becomes waste and another amount incurs in recruiting the new employee so employee retention became important in organizations. By participative management employee retention problem gradually reduce because the employee is involved in making decisions and he is bonded to those relations. Employee retention is a inter related activity on the aspects of job satisfaction, organization norms and employee benefits etc, So from the participative management the employee gets in deed relationship with management and increases his productivity and enjoys all the benefits.

Benefits of Participative Management

Participative management is one of the decision making method followed at many organizations for attaining better results. Some of the advantages are listed as follows:

1. Based on organization percepts
2. Based on employee percepts

Based on Organization Percepts

Organization attains some of the peculiar benefits from the participative management as

- Increased Productivity
- Improved quality
- Reduced costs
- Innovation
- Requires less supervision
- Higher flexibility
- Increased culture
- Increased team building

Based on Employee Percepts

Employee too attains some benefits from the implementation of participative management as

- Reduced absenteeism
- Improved quality
- Job satisfaction
- Motivation
- Sense of belongingness
- Learning opportunity
- Superior-subordinate relationship

Limitations of Participative Management

Some of the limitations of participative management are decision making requires more time and some security related problems may arise.

Conclusion

Participative management brings together employees' identification, enthusiasm, wisdom and willingness to comply with company goals and enhances the organizational performance. Employee participation does improve an individual's behavior in terms of recognition, job satisfaction and absenteeism, as well as organizational effectiveness such as productivity, profit and revenue and market share.

As to the impact of employee participation on organizational effectiveness, this study finds that QCC have positive and significant effects on revenue growth. Also, it is found that profit sharing does increase profit creation per employee for the company. However, stock-ownership plans and grievance-handling systems had negative effects on revenue growth and product value per employee. The finding of this study supports the argument that diverse forms of participation lead to different outcomes.

References

- The International Journal of Human Resource Management 8:5 October 1997-The effect of participative management on organizational performance: the case of Taiwan
- Maurice P. Marchant, "Participative Management as Related to Personnel Development,"
- Library Trends 20:48-59 (July 1971).
- Horvat. B. (1982) the Political Economy of Socialism. Annonk, NY: M.E. Sharpe™ Employee Involvement and Participation. London: Decisions within Undertakings.
- Jenson^N.C. and Mocking. W.H. (1979) 'Rights and Production Functions: An Application to' Codetermination-. Journal of Business, 52(4)
- Economics of British Producer Cooperatives'. PhD dissertation, Comell
- Jones, D.C. (1987) 'The Productivity Effects of Worker Directors and Financial Participation by Cooperatives'. Industrial.
- Pateman, Carole. 1970. Participation and Democratic Theory. Cambridge: Cambridge University Press.
- Miller, K.I., and P.R. Monge. 1986. Participation, Satisfaction, and Productivity: A Meta analytic Review. Academy of Management Journal 29:727-753.
- Lawler III., E.E., S.A. Mohrman, and G. E. Ledford, Jr. 1992. Employee Involvement and Total Quality Management: Practices and Results in Fortune 1000 Companies. San Francisco: Jossey-Bass Publishers Denison, Daniel R. 1990. Corporate Culture and Organizational Effectiveness. New York: John Wiley & Sons.
- Alper, S., Tjosvold, D. and Law, K.S. (1998), "Interdependence and controversy in group decision making: antecedents to effective self-managing teams", Organizational Behavior and Human Decision Processes, Vol. 74, pp. 33-52.
- Barrick, M.R. and Mount, M.K. (1991), "The big five personality dimensions and job performance: a meta-analysis", Personnel Psychology, Vol. 44, pp. 1-26.
- Jenkins, G. D., & Lawler, E. E. (1981). Impact of employee participation in pay plan development. Organizational Behavior and Human Performance, 28, 111-128.
- Alutto, J. A., & Belasco, J. A. (1972). A typology for participation in organizational decisionmaking. Science quarterly, 9, 27-41.
- Erez, M. (1993). Participation in goal-setting: A motivational approach. In W. M. Lafferty & E. Rosenstein (Eds.), International handbook of participation in organizations (Vol. 3). Oxford, UK: Oxford University Press.

A Review Paper on FOG Based Approach to Enhance the Security of Cloud Content

Ayushi*

Manisha Agarwal**

Manisha Jailia***

Abstract: It has been observed that traditional security systems are providing limited cloud-based security. But there is still a lack of reliability and security. This paper provides review on existing researches. Moreover this paper has discussed more secure approach. Proposed work has split data during transmission. Due to this there are less chances of security violation. Proposed encryption mechanism is capable to secure data from being destroyed. The proposed system would security not only on the application layer it is also providing security at session layer. The whole data is not transmitted on single path. Data would be divided in two parts for fog based and cloud based transmission. Then this data is encrypted. If divided data is decrypted without authentication, then it is completely unusable for the cryptanalyst. Thus proposed work would make the use of integrated fog based approach in order to enhance security of the cloud. Such system is needed as there are several limitations of traditional security mechanism.

Keyword: CLOUD, FOG, PORT, APPLICATION LAYER, SESSION LAYER, ENCRYPTION, DECRYPTION, CIPHER TEXT, PLAIN TEXT

[1] Introduction

Cloud may be internet or network that is providing services over the network which may be public or private. Cloud is available at the remote location and may be used in wide area network as well as in local area network. It may be used in the virtual private network too because there are lots of application like email and web dependent applications. Cloud computing [1] has offered Platform independency. Thus, there is no need to set particular software on the computer.

It could be said that today's business software is mobile and collaborative. This is because of cloud computing. There are several services which have made cloud computing most feasible. Cloud computing is also making data access easy to the user. Fast execution of cloud application is the basic need of enterprises. It enables the team of IT to set resources quickly to fulfill changeable non-predictable claims. These claims may be related to business. It is done with better manageability and high maintenance. It may lead to unexpectedly high cost if the administrator is not going to accept cloud price model.

Widespread acceptance of hardware virtualization, autonomic and utility computing has been provided by Inexpensive computers system and storage space devices. This type of service-oriented structural design led to a development. This is due to the availability of high powered networks. Enterprises may scale up when computing requires rise up. Cloud should be scaled down when demands get decreased.

*Ph.D. (CSE) Scholar, Banasthali Vidyapith, Banasthali, Rajasthan

**Associate Professor, Banasthali Vidyapith, Banasthali, Rajasthan

*** Associate Professor, Banasthali Vidyapith, Banasthali, Rajasthan



Figure1 Advantages of Cloud Computing [1]

[2] FOG COMPUTING

Fog computing has been considered as architecture which is making use of several collaborative end-user clients as well as near-user edge device. Fog computing expands the cloud computing along with services to the edge of network. Main objective of fogging is to improve the efficiency of the cloud. It reduces the data size transmitted to the cloud. It has been done to process, evaluate and store the data. The middle fog layer is consisting of servers. These have been installed at IP networks edge. That has been helped with restricted image storage, computer and wireless transmission devices. The fundamental task of fog servers is to attach cloud directly.

[3] EXISTING RESEARCH

There have been several types of research related to fog computing. Some of them have been discussed as below:

Bushra Zaheer Abbasi [1] presented Security challenges, Solutions and Robust Practices in fog computing. Fog Computing has extended services of cloud computing to edge of network. It inherits some of the characteristics from cloud computing. They stated that Fog computing also has some distinguished features such as geo-distribution, location awareness & low latency.

Nabil Abubaker [2] discussed Privacy-Preserving Fog Computing Paradigm. It is an extension of cloud computing. The fog computing has been proved very helpful in these days. Fog computing has been discovered to handle the issues of paradigm of cloud computing. It is found helpful to overcome a massive amount of traffic. This traffic is usually caused by a lot of IOT system. Such devices are attached to net regularly.

Yunguo Guan et al. [3] presented information Security and Privacy in Fog Computing. They discussed the threat to the fog based system in the cloud environment.

Jiyuan Zhou [4] presented the Hierarchic Secure Cloud Storage Scheme related Fog Computing. Since cloud computing methodology is growing quickly. Cloud computing confirmed a fact. The fact is that it had been considered a chief controller. There are several cloud related methodologies. That have been derives from cloud computing.

Mohamed Firdhous [5] discussed the Fog Computing. They stated how it would the Future of Cloud Computing. This paper has introduced the concept of fog along with the application and scope of cloud computing.

M.Georgescu et al. [6] made research on the requirement of cloud computing in business sector. They presented that cloud computing has become one of the most significant trends in any enterprise, not only for IT businesses.

S.Malkowski et al.[7] stated issues and chances in consolidation. That is at high resource consumption. It is related to Non-monotonic response time variations in the case of n-tier applications. It has been proposed a careful investigational review of consolidated n-tier application performance at high utilization. It has addressed the challenge by reproducible methods.

P.Pazowski [8] made review for innovative ideal of IS/IT presentation in cloud computing. The objective of this research is to show the concept of cloud computing. It also defines the definitions, main service of it along with presentation models. The purpose of authors is making comparison between the existing method of arranging and presenting IS/IT in projects with cloud computing.

B.H. Bhavani[9] made survey on resource provisioning mechanism in cloud computing system [9]. Cloud Computing has been considered a model. That enables the convenient and on-demand network. It is to access the distributed pool of configurable computing devices. The example may be networks, servers, applications and services. Those are capable to provision as well as to release.

K.Shenoy[10] explained Fog Computing. That has been considered the Future of Cloud Computing. Information Security of user is going to be the most serious issue for cloud service providers. This is due to the continuous increasing number of theft attacks of information.

M.Verma[11] discussed structural design for Load Balancing mechanism related to Fog Computing. This work has considered the benefits of load balancing for high availability and zero downtime in cloud environment.

[4] Objective

The main goal of the research is to give protection data transmission by providing data splitting option on the cloud. Some part of data would be stored on a cloud while other parts would be stored on fog side. This data would be transferred from two different locations and merged at receiving end and decoded after that. The objective of the research is to give protection against attack at the application layer where the user interacts with the network directly. The common protocol at application layers is FTP, TELNET and HTTP. The objective of the proposed work is to develop more efficient and less time-consuming system at application layer including the following:

1. To ensure the data protection by splitting and encrypting data using advanced cryptographic mechanism.
2. To reduce the probability of packet dropping and congestion.
3. To study active and passive attack
4. To provide security to network at different layer
5. to design and implement the more secure algorithm to protect data from the active and passive type of attack at an application layer
6. To create a proportional evaluation of the provided model along with previous existing security model

[5] Limitations in Traditional Work

The tradition security mechanism that has been in order to secure the cloud has the following limitations.

1. The predefined port such as 21 for FTP, 80 for HTTP has been used for data transmission.
2. The tradition encryption mechanisms were unable to secure data from being destroyed.
3. The Tradition system provided security only on the application layer. The security at the session layer has been ignored.
4. The whole data is transmitted over a single path. It was risky as if data is decrypted in unauthentic manner. Thus it is completely usable for cryptanalysis.

[6] PROPOSED WORK

The proposed work would be more secure as to traditional approach. Here the security would be applied on the application layer as well as a session layer.

Moreover, the information would be transmitted from multiple paths using a user-defined port. It has not used a predefined port such as 21 for FTP, 80 for HTTP for data transmission.

Proposed encryption mechanisms have been capable to secure data from being destroyed.

The proposed system provided security not only on the application layer it is also providing security at a session. The whole data is not transmitted in a single cycle.

Data has been split in fog and cloud. If split data is not decrypted authentically it is completely unusable for cryptanalysis.

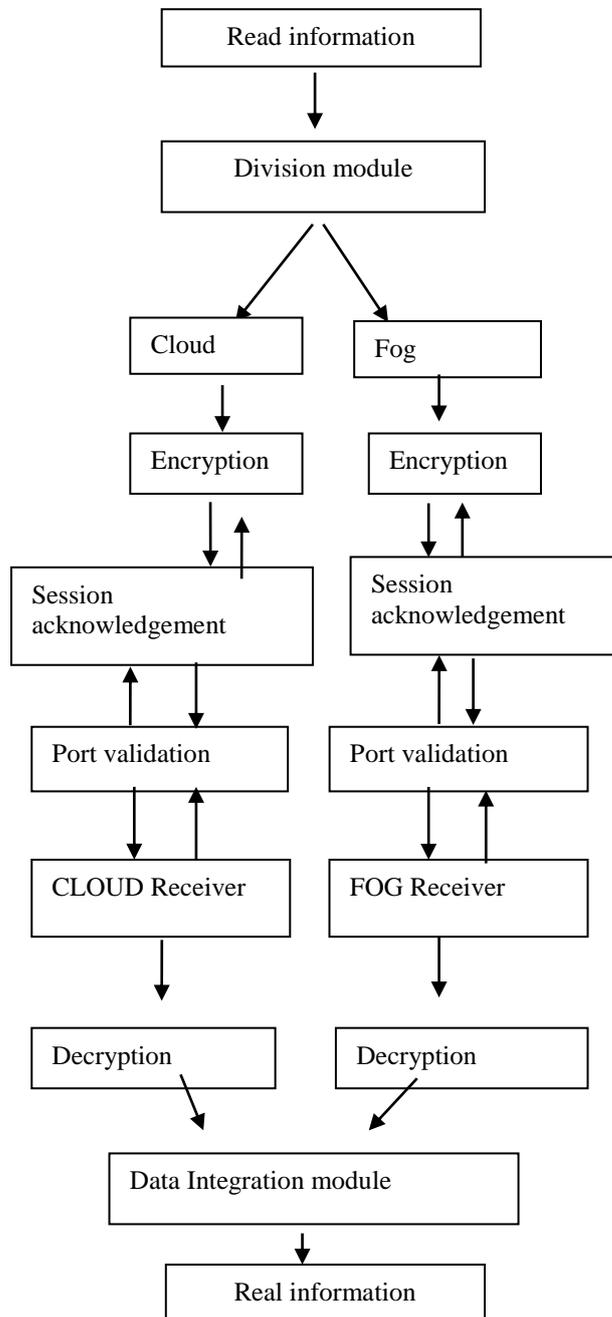


Fig 2 Proposed work

[7] Comparison between Traditional and Proposed Approach

The comparison among traditional and proposed has been represented as follow:

Table 1 Comparison between traditional and proposed work

Comparison Factors	Tradition work	Proposed work
Integration to Fog	Traditional work does not make use of Fog	Proposed work make use of fog
Level of Security	Tradition work is less secure	Proposed work is more secure as split data is transferred from two different locations.
Reliability	Tradition work is less reliable	Proposed work is more reliable.
Security at multiple layer	Tradition layer provided security on the application layer only.	Proposed work is providing security at multiple layers.
Packet dropping	The probability of packet dropping is more	There is less probability of packet dropping.
Congestion	There are more chances of congestion.	There are fewer chances of congestion.
Transmission path	Only a single path would be chosen to transmit data	Data would travel through multiple paths.
Port	Predefined	User Defined

[8] Scope of Research

In the case of traditional work, there was the security of data at the application layer only. Here in proposed work, the security has been provided to the packet. Due to the limitation of existing security mechanisms, there was a need to develop a new security system. Chance for decryption without authentication should get reduced. There is a need to implement decentralized security in order to prevent an attacker from the different network. The proposed work has divided data in multiple parts in order to provide a reliable transmission mechanism. This mechanism would make security system immune to attacks made by hacker or crackers.

References

[1] Bushra Zaheer Abbasi, et al. (2017)“*Fog Computing: Security Issues, Solutions & Robust Practices*”, Proceedings of 23rd International Conference on Automation & Computing, University of Huddersfield, Huddersfield, UK, 7-8 September 2017

[2] Nabil Abubaker, et al. “Privacy-Preserving Fog Computing Paradigm” The 3rd IEEE Workshop on Security & Privacy in Cloud (SPC 2017)

[3] Yunguo Guan, et al. “Data Security & Privacy in Fog Computing” 0890-8044/18/\$25.00 © 2018 IEEE

[4] Ji Yuan Zhou et al. [4] (2017) “A Hierarchic Secure Cloud Storage Scheme based on Fog Computing”, 2017 IEEE 15th Intl Conf on Dependable, Autonomic & Secure Computing, 15th Intl Conf on Pervasive Intelligence & Computing, 3rd Intl Conf on Big Data Intelligence & Computing & Cyber Science & Technology Congress

[5] Mohamed Firdhous, et al. (2014)“*Fog Computing: Will it be the Future of Cloud Computing?*” ISBN: 978-1-941968-00-0 ©2014 SDIWC

[6] M. Georgescu, et al. "The value of cloud computing in the business environment," The USV Annals of Economics and Public Administration, vol.13, no.1, pp. 222--228, 2013.

- [7]S.Malkowski, et al. "Challenges and opportunities in consolidation at high resource utilization: Non-monotonic response time variations in n-tier applications," in Fifth IEEE International Conference on Cloud Computing, Honolulu, HI, USA, 2012, pp. 162--169.
- [8]P.Pazowski, et al. [8] "Cloud computing – a case study for the new ideal of the IS/IT implementation," in International Conference on Management, Knowledge and Learning, Zadar, Croatia, 2013, pp. 855--862.
- [9] B.H. Bhavani, et al. "Resource provisioning techniques in cloud computing environment: A survey," International Journal of Research in Computer and Communication Technology, vol.3, no.3, pp. 395--401, 2014.
- [10]K.Shenoy et al. "Fog Computing Future of Cloud Computing", International Journal of Science & Research (IJSR) Volume 4 Issue 6, pp.55-56, June 2015.
- [11]M.Verma, et al. "architecture for Load Balancing Techniques for Fog Computing Environment", I.J. Information Technology & Computer Science Volume 6 No.2, pp.269-274, April 2016, DOI:10.090592/IJCSC.2015.627.
- [12]https://www.researchgate.net/profile/Hany_Atlam/publication/324280213/figure/fig3/AS:613074050494464@1523179652186/Fog-computing-supports-many-IoT-applications-to-provide-better-service-to-customers.png
- [13] M. Armbrust, et al. "Above Clouds: A Berkeley View of Cloud Computing", Electrical Engineering & Computer Sciences University of California at Berkeley, pp1-24, February 2009.
- [14] X .Ouyang, et al. "Spotlight: An Information Service for Cloud", IEEE, pp.1-51, MAY 2016.
- [15] Esposito, et al. "Challenges of connecting edge & cloud computing: A security & forensic perspective", IEEE Cloud Computing 4(2), pp.13-17, 2017.
- [16] M, et al. "Security & Privacy in Fog Computing: Challenges1", IEEE, VOLUME 5, pp.19293-19304, September 2017, DOI 10.1109/ACCESS.2017.2749422.
- [17] J. K. Zao, et al. "Augmented Brain Computer Interaction based on Fog Computing & Linked Data", International Conference on Intelligent Environments, IEEE, pp.374-377, 2014, DOI 10.1109/IE.2014.54.
- [18]P.Dhiman, et al. "Fog Computing Shifting from Cloud to Fog", International Journal of Engineering Science & Computing Volume 7 Issue No.3, pp.4993-4995, March 2017.
- [19] T. B. Dhore, et al. "FOG Computing", International Journal of Research In Science & Engineering, ISSN: 2394-8299, pp.65-68,2016.
- [20] A. Gupta, et al. "A Resourceful Technique for Virtual Machine Migration in Fog Computing", International Journal of Emerging Technology & Advanced Engineering, ISSN 2250-2459, Volume 6, Issue 6, pp.167-170, June 2016.
- [21]S.Khan et al., "Fog computing security : are view of current applications & security solutions", Journal of Cloud Computing: Advances, Systems & Applications, Springer open, pp.2-22, 2017, DOI:10.1186/s13677-017-0090-3.
- [22] K. Dolui, et al. "Comparison of Edge Computing Implementations: Fog Computing, Cloudlet & Mobile Edge Computing", IEEE, pp.1-6, 2017.
- [23] H. A. M. Name et al., "User Mobility & Resource Scheduling & Management in Fog Computing to Support IoT Devices, IEEE, PP.191-196, 2017.
- [24]N.K.Giang, et al. "On Developing Smart Transportation Application in Fog Computing Paradigm", ACM, pp.9198,2016, DOI:<http://dx.doi.org/10.1145/2989275.2989286>.

- [25] F. Y. Okay, et al., “A Fog Computing Based Smart Grid Model”, IEEE, pp.1-6, 2016.
- [26] A. A. NASR, “Performance Enhancement of Scheduling Algorithm in Heterogeneous Distributed Computing Systems”, (IJACSA) International Journal of Advanced Computer Science & Applications, Vol. 6, No. 5, pp.88-96, 2015.
- [27] C. Mouradian, et al. “A Comprehensive Survey on Fog Computing: State of-the-art & Research Challenges”, IEEE,
- [28] N.M. murthy, et al. “RESEARCH STUDY ON FOG COMPUTING FOR SECURE DATA SECURITY”, ISSN 2394-1537 Vol. No.5, Special Issue No.01, pp.221-227, Feb 2016.
- [29] K. Jakimoski, et al. “Security Techniques for Data Protection in Cloud Computing”, International Journal of Grid & Distributed Computing, ISSN: 2005-4262, Vol. 9, No. 1, pp.49-56, 2016, <http://dx.doi.org/10.14257/ijgdc.2016.9.1.05>.
- [30] K.P.Saharan, et al. “Fog in Comparison to Cloud: A Survey”, International Journal of Computer Applications, Volume 122 – No.3, pp.10-12, July 2015

Increasing Female Labour Participation Rates - A Public Agent's Intervention

Dr Ameena Babu V*

Mr Dilraj K R**

Abstract

This paper talks on the female labour participation rate and its overall impact in the economy. The paper is an empirical investigation which specifically focuses on the female labour participation rate with respect to the non governmental organisation named Kudumbhasree that operates in Kerala. The research shows that the Labor Force Participation Rate for Women is one of the lowest in the world for India. Women constitute 48.5% of the population in India. In India, the decline is even steeper that it went down from 35.1 in 1990 to 27.2 in 2017. According to the latest NSSO data of 2011-12, female work participation rate (FWPR) in rural areas in Kerala was 22.1 compared to that of men at 56.5. The FWPR at all-India level for the corresponding year was 24.8. The paper further emphasises on the authorized intervention of Kudumbhasree in the Metro project recently set up in Kerala. The success of this experiment is a strong indicator that specialised schemes and missions like Kudumbashree in all states can positively influence the FLPR. It can also be found that unemployed ladies or housewives can be brought to economic activity and employment if we give them opportunity in organised sector. So the specialised schemes like Kudumbashree and their interventions in the job market and other initiatives is one among the way to increase the FLPR as well as to bring more gender equality

1.1 Female Labour Participation Rate

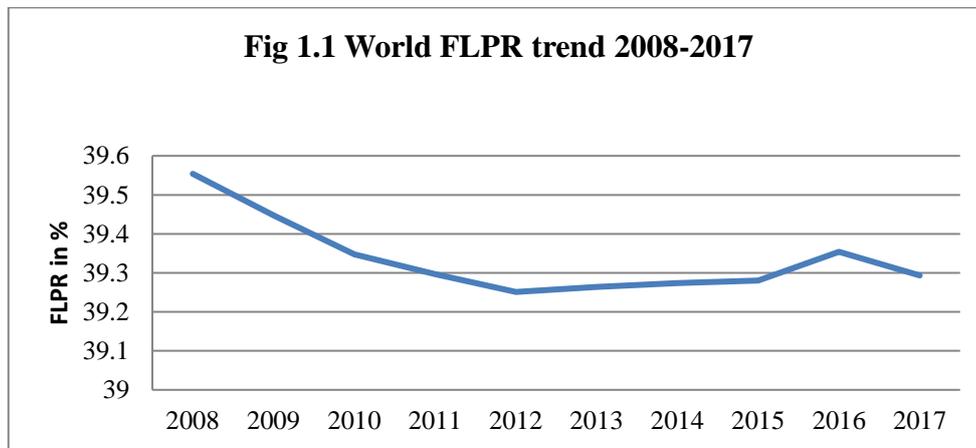
The labour force participation rate is a measure of the proportion of a country's working-age population that engages actively in the labour market, either by working or looking for work; it provides an indication of the size of the supply of labour available to engage in the production of goods and services, relative to the population at working age. (International Labour Organization, ILOSTAT database. Early release of the 2017 ILO Labour Force Estimates and Projections, retrieved in November 2017)

1.2 World trend – FLPR

The Female Labour Participation Rate (FLPR) has been declining in the world from 51.3 in 1990 to 48.67 in 2017. The country with the highest value in the world is Rwanda, with a value of 86.04. The country with the lowest value in the world is Yemen, with a value of 6.00. The Labor Force Participation Rate for Women Is one of the lowest in the world for India. Women constitute 48.5% of the population in India. In India, the decline is even steeper that it went down from 35.1 in 1990 to 27.2 in 2017. (International Labour Organization, ILOSTAT database. Early release of the 2017 ILO Labour Force Estimates and Projections, retrieved in November 2017). Despite educational gains, the labor force participation rate for women in 2017 was 27.2% (compared to 82% for men). Innumerable studies have been done in finding out the reasons for this falling rate and the impact FLPR is having on economy.

*Assistant Professor, Amity Global Business School, Kerala, India

**Project Manager, Facility Management Center – Kudumbhasree, Kerala, India



The above figure shows the past ten years (2008-2017) decreasing pattern of female labour participation rate globally.

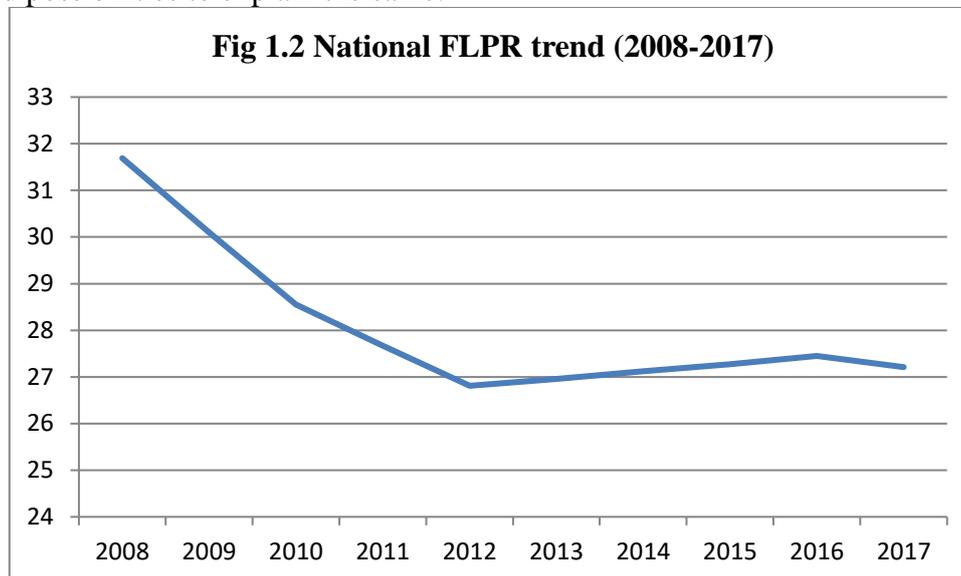
In a recent study, researchers Albanesi and Olivetti (2016)⁵ consider how improvements in maternal health between 1930 and 1960 contributed to rising female labor force participation in the US during those time period. In most recent studies, Lundborg, Plug and Rasmussen (2017)⁹ found that women who are successfully treated by in vitro fertilization (IVF) in Denmark earn persistently less because of having children. Leading online publisher, “Our world in data” with compelling empirical evidence cites 5 factors in determining FLPL namely 1) Maternal Health 2) Fertility 3) Child care and family oriented policies 4) Labour saving consumer durables 5) Social norms and culture 6) Structural change in the economy.

1.3 Indian scenario

In India, much of the discussion on the falling trends has focused on four key explanations: 1) rising educational enrolment of young women; 2) lack of employment opportunities; 3) effect of household income on participation; and 4) measurement (Mazumdar and Neetha, 2011). In an article “Women’s labour force participation in India: Why is it so low?”, (Sher Verick, ILO) says, “policy makers in India and throughout the region should take a comprehensive approach to improving labour market outcomes for women through improving access to and relevance of education and training programs, skills development, access to child care, maternity protection, and provision of safe and accessible transport, along with the promotion of a pattern of growth that creates job opportunities. Beyond standard labour force participation rates, policy-makers should be more concerned about whether women are able to access better jobs or start up a business, and take advantage of new labour market opportunities as a country grows. A policy framework encouraging and enabling women’s participation should be constructed with active awareness of the “gender-specific” constraints that most women face. Gender responsive policies need to be contextually developed.”

In a report by Mckinsey in November 2015, the power of parity, it says India could boost its GDP by \$0.7 trillion in 2025; an increase of 16 % compared with business as usual level. This way the world could add \$2.9 trillion to GDP by 2025 doubling the contribution of women to global growth in business-as-usual scenario in the coming decade. By fully bridging the gap of gender inequality, India can bring 68 million more women to the workforce “. This paper describes such a public intervention taken place in Kerala by

which it has been able to influence the state through agents Kudumbashree; and further explored possibilities to explain the same.



Source: India - Labor force participation rate, female (modeled ILO estimate)

The above figure 1.2 shows the female labour participation rate in India since past ten years. The line shows a decreasing trend during 2008-12 and thereafter slight positive changes are seen. In 2017, the value of FLPR is 27.21

2.1 Background

On the strength of its historically impressive accomplishments in social and human development, Kerala gained a place of prominence in the development discourse as the “Kerala model of development” (UN-DESA, 1975). Its human development indicators are not only far ahead than other states in India but also comparable to the western countries. But contradictory to the high human resource indicators, the FLPR in Kerala is much below the other states.

According to the latest NSSO data of 2011-12, female work participation rate (FWPR) in rural areas in Kerala was 22.1 compared to that of men at 56.5. The FWPR at all-India level for the corresponding year was 24.8. As per a recent World Bank report published in 2017, Kerala’s FLPR is 32, but still ranks 18th among all states in India.

2.2 Intervention by a public entity - Kudumbashree

Kudumbashree is the poverty eradication and women empowerment programme implemented by the State Poverty Eradication Mission (SPEM) of the Government of Kerala in 1998 with an aim to eradicate poverty in rural and urban areas of Kerala through community development schemes, under the leadership of Local Self Governments. It is now considered as one of the largest women empowering projects in India. The programme is linked to local self-government institution and it makes all the effort to alleviate poverty through an integrated approach involving effective union of resources and action.

Kochi Metro is India's first metro service for a tier-II city and is being built at an approximate cost of Rs 6,000 crore. It started its operations in May 2017 and now covers a span of 21 kilometres. It has created a paradigm shift in the transportation habits of Kochi population and poised to expand more.

Kochi Metro has signed an agreement with Kudumbashree, to entrust its entire facility Management services in the hands of Kudumbashree. Kudumbashree has employed 820 women in the services and thus making Kochi Metro the first ever metro station in the world to have its facility management services handled by only women. This tie up has made these women who are unemployed, part time workers and those working in unorganised sector migrate to an organised environment. The employment has been given to the women in the Ernakulam District, where the Metro system is located. Kudumbashree has also devised a unique reservation system to facilitate the employment opportunities reach the underprivileged women. It has provided reservations to the following sections:-

- 1) People who have got evacuated for Metro construction
- 2) Destitute families protected by Kudumbashree called Aasraya
- 3) Victims of atrocities
- 4) People who have critical patients at home
- 5) People who have disabled persons at home
- 6) SC/ST Fishermen

Out of the 820 women employed, 542 women are from the above mentioned sections. To add on its value, Kudumbashree has employed 23 members of transgender community which has been noticed by world media also. The experiment has been a success because of the existence of an entity called Kudumbashree in the state of Kerala.

Kudumbashree has three tiers community based organization (CBO) for its effective administration and decentralized operations. (i) Neighbourhood group (NHG) -This is the lowest tier consisting of 15 to 40 women members from poor families. Meetings are arranged on a weekly basis, in the house of one of the NHG members. (ii) The Area Development Society (ADS) is the second tier. ADS are formed at ward level- panchayat, municipality or a corporation by joining 10-15 NHGs. (iii) The Community Development Society (CDS) is the highest tier formed by union of all the ADSs in the respective panchayat, in 'rural' or municipality and in 'town' or corporation in city areas. It monitors the thrift and credit activities of NHGs at these levels ie. Panchayat or municipality or corporation level. All together 43 lakh women and families in the state have been covered by Kudumbashree.

2.3 The Process

As soon as the agreement signed between Kochi Metro and Kudumbashree, a detailed job notification was issued to 100 CDS's in the District and 40000 applications has been received. A written test and interview was conducted and 1100 candidates were shortlisted. The shortlisted women were sent for training and sent on board as per their qualifications. Now the operations have completed 15 months of operations and the women are earning their livelihood. All the staffs were given uniforms, all the facilities and welfare measures like mandatory benefits, provident fund and ESI and provision for two wheeler loans are provided.

The model works on cost plus model, where Kochi Metro gives additional 12% as administrative costs to Kudumbashree over and above the salary and other expenses. The public intervention has helped to take female employment ratio which is shown in the table 2.1 below, in a newly started system from expected 10% to 66%.

Table 2.1 Metro Female employee ratio, 2017

	Male	Female	Total	Female ratio
Kochi Metro own employees	450	50	500	10%
Kudumbashree employees	NA	820	820	100%
Total	450	870	1320	66%

3.1 Conclusion

The success of this experiment is a strong indicator that specialised schemes and missions like Kudumbashree in all states can positively influence the FLPR. It can also be found that unemployed ladies or housewives can be brought to economic activity and employment if we give them opportunity in organised sector. So the specialised schemes like Kudumbashree and their interventions in the job market and other initiatives is one among the way to increase the FLPR as well as to bring more gender equality, which in turn would be helpful to the economy.

References

- 1) International Labour Organization, ILOSTAT database. Early release of the 2017 ILO Labour Force Estimates and Projections, retrieved in November 2017.
- 2) Stefania Albanesi & Claudia Olivetti, 2016. "Gender Roles and Medical Progress," Journal of Political Economy, University of Chicago Press, vol. 124(3), pages 650 – 695.
- 3) PetterLundborg, Erik Plug, Astrid Würtz Rasmussen "Can Women Have Children and a Career? IV Evidence from IVF Treatments"
- 4) Mazumdar, I.; Neetha, N. 2011. "Gender dimensions: employment trends in India, 1993–94 to 2009– 10", Economic and Political Weekly, Vol. 46, No. 43, pp. 118-126.
- 5) ILO report by Sher Verick, 2015, "Women's labour force participation in India: Why is it so low?"
- 6) UN-DESA report of 1975
- 7) World Bank report, June 20, 2017 " Kerala Gender "

Application of Natural Dyes for the Development of Textile Sustainable Processes and Its Environmental Impact: A Study

Anup Kumari¹, Prof. (Dr.) Satyaveer Singh^{2*}

Abstract

The aim of this research is to give an overview on the health and environmental impact of dyes as pollutants as well as; the most recent treatment techniques of textile effluents wastewater. Dyes are an important class of synthetic organic compounds used in many industries, especially textiles. Consequently, they have become common industrial environmental pollutants during their synthesis and later during fibre dyeing. Textile industries are facing a challenge in the field of quality and productivity due to the globalization of the world market. As the highly competitive atmosphere and the ecological parameters become more stringent, the prime concern of the textile processors is to be aware of the quality of their products and the environmental friendliness of the manufacturing processes.

1. Overview

Dyes derived from natural materials such as plant leaves, roots, bark, insect secretions, and minerals were the only dyes available to mankind for the colouring of textiles until the discovery of the first synthetic dye in 1856. Rapid research strides in synthetic chemistry supported by the industrialization of textile production not only led to the development of synthetic alternatives to popular natural dyes but also to a number of synthetic dyes in various hues and colors that gradually pushed the natural dyes into oblivion. However, environmental issues in the production and application of synthetic dyes once again revived consumer interest in natural dyes during the last decades of the twentieth century[1].

Textiles colored with natural dyes are preferred by environmentally conscious consumers and today there is a niche market for such textiles. But the total share of natural dyes in the textile sector is approximately only 1 % due to certain technical and sustainability issues involved in the production and application of these dyes such as non-availability in ready-to-use standard form, unsuitability for machine use, and limited and nonreproducible shades. Natural dyes per se are sustainable as they are renewable and biodegradable, but they cannot fulfill the huge demand from the textile sector in view of the preferential use of land for food and feed purposes.

Also, overexploitation of natural resources to obtain dyes may result in deforestation and threaten endangered species. For these reasons, the Global Organic Textiles Standard (GOTS) permits the use of safe synthetic dyes and prohibits the use of natural dyes from endangered species. Various research efforts have been undertaken all over the world to address the shortcomings of natural dyes in view of the tremendous environmental advantage they offer. This book attempts to review the current status of natural dyes and

* Department of Chemistry

^{1,2}OPJS University, Churu (Rajasthan)

various sustainability issues involved in their production and application and examines their future prospects.

The decentralized sector consists of khadi, handloom, powerloom and hosiery. The organized mill sector in India includes around 1400 turning mills and 280 composite mills. The axle limit has expanded from 11 million axles in 1951 to more than 33 million shafts (19% of world's axles) in 1997. In any case, the weaving limit has declined consistently from a level of 2.1 lakh looms in 1951 to 1.24 lakh looms in 1997. This is for the most part a result of the re-organizing because of serious rivalry from the powerloom sector. The weaving limit is relied upon to tumble down further till this sector turns out to be totally trade arranged. At present, the offer of mill sector in the total fabric generation in the country is about 6%.

India is wealthy in natural riches, and there is sufficient scope to investigate and resuscitate application of natural dyes on textiles, having increasingly more logical information base available, as is confirmed from the examinations detailed with the targets, for example, to know the chemistry of dyes and connection between stringent dyes and filaments; to get most extreme yield of colorant and reproducible shades; to have commercial accessibility of removed natural dyes in powder shape; to enhance the coloring techniques/yields; to advance coloring conditions; to create more current shades; and to enhance dyeability with natural dye[2].

Production of engineered dyes is subject to the petrochemical source, and a portion of the manufactured dyes contain dangerous/cancer-causing amines which are not eco-friendly. Besides, the worldwide consumption of textiles is evaluated at around 30 million tons, which is relied upon to develop at the rate of 3% per annum the coloration of this tremendous quantity of textiles needs around 700,000 tons of dyes which causes arrival of an immense measure of unused and unfixed manufactured colorants into the environment[3].

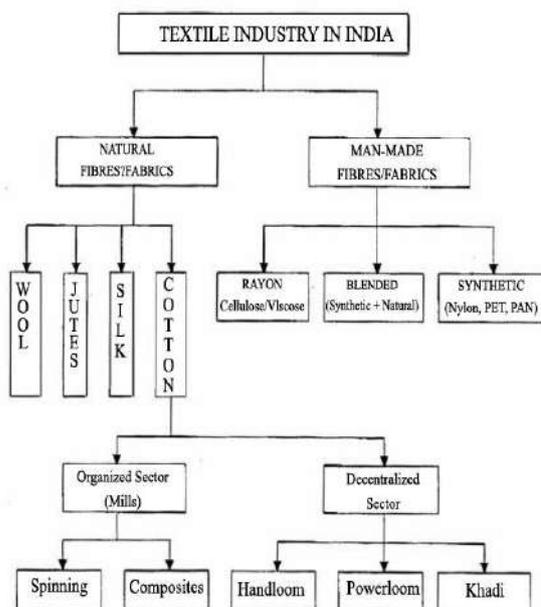


Figure 1: Arbitrary classification of textile industry in India

Globalization unquestionably has numerous advantages - expanded cultural entwining (in this manner more acknowledgment and social resistance), higher stream of data, immense market empowering production et cetera. In any case, it has likewise created an arrangement of challenges that must be tended to desperately. People and way of life transform quickly, thus their desires. The previous decades speak to stressed ages, progressively mindful of the centrality of biodiversity's assurance and the significance of biological impression's decrease. The interest for normal items is exceedingly recognizable in the market; there's an expansion on natural merchandise's utilization, reused and recyclable materials, non-creature tried items, and so on.

2. Sustainable Design

- **Bioresources – textile natural dyes**

Designer and shopper's desires towards sustainability in the textile field and their consciousness of the issues encompassing current production processes set off some consideration on issues, for example, atmosphere, environment and wellbeing. The inclination for organic materials has, therefore, expanded. This has prompted the reintroduction of antiquated dyes in the market, natural dyeing colorants known for their biodegradable nature and less lethal highlights. These old dyes are gotten through biological assets, typically plants or creatures, and were utilized as far back as two thousand years prior.

- **Natural colorants implementation**

Notwithstanding, while nature is overflowing with hued compounds, not all that nature gives can be utilized in dyeing. Just a small percentage of these natural substances are connected to textiles - for the most part, convey dull, uneven shades and poor fastness when washed and presented to light or perspiration. Most natural dyes still unspecified as far as fastness properties and methods of extraction, production and application included. As fluctuated thinks about demonstrate, there's an extraordinary requirement for research to beat issues identified with the usage of natural dyes in present-day dye houses, particularly in regard to effective dyeing formulas and their varieties.

3. Effects of Dyes

Historically, the interiors of a home furnished in rich, deep colors indicate a great amount of affluence and high standing. Today, as in the past, warm hues lend a feeling of comfort and warmth to a home. The task of making clothing and home furnishings fell to the lady of a house, or on her servants, until the mid-1800s. This included dyeing the necessities textiles. Fabric remains dating back to over 1000 B.C. have been identified as dyed using madder and cochineal, and colonists in America used plants such as indigo to color their garments.

The cancer-causing nature of azo dyes, which comprise a huge extent of textile dyes, is notable. Some azo dyes have been connected to bladder malignancy in humans; to splenic sacromas, hepatocarcinomas and nuclear irregularities in experimental creatures and to cause chromosomal aberration in mammalian cells. There is proof that malachite green not just has impact on resistant and conceptive systems yet in addition is a potential genotoxic and cancer-causing operator. CI disperse blue has been appeared to cause outline move transformation and base combine substitution in Salmonel. The genotoxic and cytotoxic impact of this dye on human cells have likewise been examined. The creators report the arrangement of micronuclei which are shaped because of chromosomal breakage (clastogenicity) and aneuploidy.

- **Health and Environmental Impact of Dyes**

There is no proof to suggest that the greater part of the dyestuffs at present utilized in textile dyeing and completing are unsafe to human wellbeing at the dimensions of presentation that specialists by and large face in the plants. Be that as it may, with long haul or inadvertent over presentation, there can be likely wellbeing hazards, and all dyes and chemicals should subsequently be treated with care. The most widely recognized risk of responsive dyes is respiratory issues because of the inward breath of color particles. Now and then they can influence a person's insusceptible framework, and in outrageous cases, this can imply that when the person next breathes in color, their body can respond drastically.

4. Application of Natural Dyes on Textiles

Saidman et al. (2002)[4] have surveyed the chemistry, chemical structure and chemical based arrangement of natural dyes having anthraquinone (madder), alpha naphthoquinones (henna), flavones (weld), indigoids (indigo and Tyrian purple), carotenoids (annatto, saffron), and so forth which give an essential comprehension of chemical nature of such colourants. Madder dyes are hydroxyl-anthraquinones which are removed from the root bark of different Rubiaceae, for example from the madder root (Rubiactinctorum). The root contains around 1.9% of color, present in the free shape or bound as the glucoside. Mash is wealthy in tannin however contains a blend of eight colorants of carotenoid gathering, for example, nor-bixin and bixin. Both these parts have the properties of Vitamin A.

Bhattacharya et al. [5] examined the impact of different metal sulfates as mordants and announced that the profundity of coloring could be enhanced by utilizing distinctive metal salt mordants. Das et al. [6] saw that the premordanting and post-mordanting utilizing ferrous sulfate and aluminum sulfate enhance the shading take-up, light fastness and shading maintenance on continued washing. The utilization of such mordants, in any case, does not enhance wash fastness property of colored textile substrate with pomegranate. Das et al. [7] detailed that the ferrous sulfate and aluminum sulfate enhance shading maintenance on washing and the fastness properties further for a colored textile substrate with tea leaves.

5. Conclusion

Dyes might be characterized as substances that, when connected to a substrate gives shading by a process that modifies, in any event incidentally, any precious stone structure of the hued substances. Such substances with extensive shading limit are generally utilized in the textile, pharmaceutical, food, beauty care products, plastics, photographic and paper enterprises. The dyes can stick to perfect surfaces by arrangement, by shaping covalent bond or edifices with salts or metals, by physical adsorption or by mechanical maintenance. The most widely recognized auxochromes are an amine, carboxyl, sulfonate, and hydroxyl. It is evaluated that more than 10,000 distinct dyes and shades are utilized modernly and more than 7 x 10⁵ tons of synthetic dyes are every year delivered around the world.

A few Azodyes cause harm of DNA which prompts dangerous tumors. Toxicity can be decreased with protonation of amino gatherings. The azodyes, for example, coordinate dark, azodisalecylate and their breakdown subordinations like bezidine, its subsidiaries, countless nitro semis, dimethyl amines and so forth are known to prompt malignancy in human and creatures. Some azodyes have been connected to bladder disease in humans,

splenic fragrances, hepato carcinomas and nuclear irregularities like chromosomal aberration in mammalian cells.

Being aware of new technology, such as pad batch dyeing, can accomplish both economic and ecological goals. Being abreast of the latest technology and scientific discoveries is a great advantage for American textile companies. In doing this, they will be able to plan to incorporate the latest technology. This will not only save the company money in the long run but allow them a competitive advantage by utilizing time and energy conserving practices which will result in higher profits.

References

- [1]. Colour from Nature –Silk Dyeing Using Natural Dyes (SERI-2000) (Oxford & IBH Pub. Co.Pvt.Ltd.), 2000, 11- 88.
- [2]. Samanta A K, Singhee D & Sethia M, Proceedings, Convention of Natural Dyes, edited by Deepti Gupta and M L Gulrajani (Department of Textile Technology, IIT Delhi), 2001, 20
- [3]. Gotmare V D, Dorugade V A, Chitins P U, Shirodkar K J & Palav M, Proceedings, Convention of Natural Dyes, edited by Deepti Gupta and M L Gulrajani (Department of Textile Technology, IIT Delhi), 2001, 32.
- [4]. Saidman E, Yurquina A, Rudyk R, Molina M A A, Ferretti F H, J Mol Struct, 585(5) (2002) 7.
- [5]. Maulik S R & Pal P, Man-made Text India, 48 (1) (2005) 19.
- [6]. Das D, Bhattacharya S C & Maulik S R, Indian J Fibre Text Res, 31 (12) (2006) 559.
- [7]. Das D, Bhattacharya S C & Maulik S R, Int J Tea Sci, 4 (3 & 4) (2005) 17.

A Comparative Analysis Of Equity Stocks At Sbi And Icici Bank

Dr.D.Madan Mohan*

Abstract

A stock or any other security representing an ownership interest. On a company balance sheet funds contributed by the owners and the retained earnings also referred as equity. In terms of investment strategies an equity is one of the principal asset. In finance the equity as ownership in any asset after all debts associated with the asset are paid off. In Indian stock market has returned about 17% to investors on an average in terms of increase

in share prices or capital appreciation annually. Besides that on an average, stocks have paid 1.5 % dividend annually. Dividend is a percentage of the face value of a share that a company returns to its shareholders from its annual profits. Comparing the most other forms of investments investing in equity shares offers the highest rate of returns if invested over a long duration. Banks are the major part of any economic system. They provide a strong base to Indian economy as well. Even in the share markets, the performance of banks shares is of great importance. Thus, the performance of the share market, the rise and the fall of market is greatly affected by the performance of the banking sector shares and this study revolves around all factors, their understanding and a theoretical and technical analysis.

Keywords: Banking Sector, Equity Analysis, Technical Analysis, Fundamental Analysis, Beta.

1. Introduction

1.1. Banking Sector: As per the Reserve Bank of India (RBI), India's banking sector is sufficiently capitalized and well-regulated. The financial and economic conditions in the country are far superior to any other country in the world. Indian banking industry is expected to witness better growth prospects in 2015 as a sense of optimism stems from the Government's measures towards revitalizing the industrial growth in the country. In addition, RBI's new measures may go a long way in helping the restructuring of the domestic banking industry.

Indian banks are increasingly focusing on adopting integrated approach to risk management. Banks have already embraced the international banking supervision accord of Basel II. According to RBI, majority of the banks already meet capital requirements of Basel III, which has a deadline of March 31, 2019. Most of the banks have put in place the framework for asset-liability match, credit and derivatives risk management.

Rising incomes are expected to enhance the need for banking services in rural areas and therefore drive the growth of the sector; programmes like MNREGA have helped in increasing rural income aided by the recent Jan Dhan Yojana. The Reserve Bank of India (RBI) has relaxed its branch licensing policy, thereby allowing banks (which meet certain

* Principal / Professor, Indur P.G. College of Business Management, Achanpally, Bodhan-503180, Nizamabad (dist), Telangana State

financial parameters) to set-up new branches in tier-2 to tier-6 centers, without prior approval from RBI. It has emphasized the need to focus on spreading the reach of banking services to the un-banked population of India.

Equity: Equity is the interest of investors in the business firm. The investors can own equity shares in a firm in the form of common stock or preferred stock. On a company's balance sheet equity is represented by common stock, preferred stock, paid in capital and retained earnings. The equity can be calculated by subtracting total liabilities from total assets. Equity Analysis: Equity or stock analysis is a term that refers to the evaluation of particular trading instrument in the investment sector or market as a whole. There are two types of equity analyses.

1. Fundamental Analysis
2. Technical Analysis

Fundamental Analysis: Fundamental Analysis is the analysis of different forces that affect the health of the economy in the industry groups and companies. The fundamental analysis main goal is to drive forecast and profit from future price movements and it may involve examination of financial data, management, business concept and competition. For the national economy fundamental analysis might focus on economic data to assess the present and future growth of the economy to forecast future stock prices, future value, and stocks value. The fundamental analysis look into capitalize on perceived prices, concentrates on data from sources including financial records, economic records, company assets and market shares.

Technical Analysis

Technical Analysis refers to the study of market generated data like prices & volume to determine the future direction of prices movements. Technical analysis mainly seeks to predict the short term price travels. The focus of technical analysis is mainly on the internal market data, i.e. prices & volume data. It appeals mainly to short term traders. It is the oldest approach to equity investment dating back to the late 19th century. Financial Ratios from the statements of an organization provide useful information on the performance of the company. Technical analysis helps to predict trend of the share prices. Financial ratio analysis is a tool of financial statement, it simplifies the financial statements. Ratio Analysis explains relationship between past and present information.

Beta

Beta is used in the finance as a measurement tool of investment portfolio risk. Beta is calculated as the covariance of the portfolio returns of the company with benchmark returns divided by the variance of the benchmark returns. A beta of 1.5 means that for every 1% change in the value of the benchmark and the portfolio's value changes by 1.5%. When $\beta=1$ the scrip has same instability as compared to index. This level of risk is suitable for moderate investors. When $\beta>1$ the scrip is more instability as compared to market suitable for aggressive investors. When $\beta<1$ the scrip is less instability as compared to market and suitable for defensive investors.

Beta of stocks plays vital role in scrip selection in Portfolio management. Portfolio can be created in many ways as sector wise, diversified in various sector, beta wise scrip portfolio.

12. Need for the study

The shareholders are the owners of the company they have to pay regular interest and principal at the end. Stock/shares are playing a major role in acquiring capital to the business in return investors are paid dividends to the shares they won. The more shares you

own the more dividends you receive. The role of equity analysis is to provide information to the market. An efficient market relies on information a lack of information creates in efficiencies that results in stocks being misrepresented. This study fills information gaps so that each individual investor not needs to analyse every stock thereby making the markets more efficient. The study is need to the performance of stocks through analysis in order to know the trend of a share, which helps in deciding whether to invest or not to invest in the security. The research studies provided that investments in some shares with a longer tenure of investment have yielded far superior returns than any other investment. However this does not mean all equity investments would guarantee similar high returns. Equities are high risk investments. One needs to study them carefully before investing.

13. Scope of the study

The study is mainly limited to the Equity Analysis of banks SBI, & ICICI with the help of tools and risk and relationship involved in share prices of the banks tested. Further has covered five years time period. The study is helping to identify volatility of selected banks.

14. Objectives of the Study

1. To analyse the performance of the stocks using financial ratios.
2. To analyse equity stocks using Fundamental and Technical analysis SBI & ICICI.
3. To find risk involved in equity stocks in SBI & ICICI

15. Research Methodology:

The present study is based on secondary data. The secondary data was collected from books, journals, and company websites. The entire secondary data were collected from official websites of Nifty. The period of the study is five years 2011 to 2015. The tools used for analysis means, covariance, beta, ratios, and trend analysis. To test the hypothesis the statistical tools was used such as chi-square and correlation analysed by using the software's of MS-excel and SPSS.

2 REVIEW OF LITERATURE

Grewal S.S & Navjot Grewal (1984) revealed some basic investment rules they warned the investors not to buy unlisted shares, as stock exchanges do not permit trading in unlisted shares. Another rule that they specify is not to buy inactive shares and the third rule according to them is not buy shares in closely held companies because these shares tend to do less active than the widely held ones since they have few number of share holders.

Preethi Singh (1986) disclosed the basic rule for selecting the company to invest in the stocks. The opinion and understanding that measures the return and risk is fundamental to the investment process. Most of the investors are risk aware and to get more returns the investors has to face greater risk. She concludes that the risk is fundamental to the process of investment. The investor should evaluate the financial statements with special references to solvency, profitability, EPS and efficiency of the company.

S.P. Kothari and Jay Shanken and Sloan (1995) shows that beta significantly explains cross sectional variation in average returns, but that size also has incremental explanatory power. The findings shown that statistically significant, the incremental benefit of size given beta is surprisingly small economically.

Sahil Jain (july-aug. 2012) analysed equity based mutual funds in India. An attempt has been made to analyze the performance of equity based mutual funds. A total of 45 schemes offered by 2 private sector companies and 2 public sector companies, have been studied over the period april 1997 to april 2012(15 years). The analysis has been made using the risk return relationship and capital asset pricing model (CAPM). The overall analysis

found that HDFC and ICICI have been the best performance. UTI an average performer and LIC the worst performance which gave below expected returns on the risk return relationship.

M.S. Annapoorna and Pradeepkgupta (Oct 2013) made a comparative analysis of returns of mutual funds scheme ranked 1 by CRISIL. The main aim was to evaluate the performance of mutual fund schemes ranked 1 by CRISIL and to compare these returns with SBI domestic term deposit rates. The results obtained from the study clearly depicted that, in most of the cases the mutual fund schemes have failed even to provide the return of SBI domestic term deposits.

T. Naryanaswamy & A.P. Muthulakshmi (2014) examined the relative efficiency of all the private sector banks in India from 2008 to 2013 data envelopment analysis methodology. Axis Bank, Kotak Mahindra Bank, and ICICI Bank were relatively efficient in terms of technical efficiency, pure technical efficiency, and scale efficiency. The average (overall) technical inefficiency score during the study period was found to be 6%. In terms of pure technical efficiency, apart from the above three banks, HDFC Bank and National Bank were also relatively efficient. The average (overall) pure technical inefficiency score during the study period was found to be 5%. Positive correlation ranging from 0.7 to 0.95 was observed between return on assets and different types of efficiencies during the study period (except for the year 2008-09). Negative correlation ranging from -0.3 to 0.5 was observed between non-performing assets ratio and different types of efficiencies during the study period (except for the year 2008-09).

Hanumantha Rao P, Subhendu Dutta (2014) observed that the last 5-6 years have been very volatile for not only the Indian economy, but also for the entire world economy. Lots of investors have lost their money as the stock prices have fallen flat all over the world during this period. The banking sector has always been one of the important sectors for investment. In the time of uncertainty, when some are arguing that the economies are in the process of recovery, and while others are opining that the world is set for another recession soon, the present article attempted to study the fundamentals of the banking sector in India. Their article considered the variables like net operating margin (OPM), net profit margin (NPM), return on equity (RoE), earnings per share (EPS), price earnings ratio (PER), dividends per share (DPS), and dividend payout ratio (DPR) for a period of 6 years from 2006-07 to 2011-12 for three major banks in India - SBI, ICICI Bank, and HDFC Bank. The paper also compared the fundamentals of SBI, ICICI Bank, and HDFC Bank.

Shalini Shukla (2015) conducted a study on performance of the banking industry in India on the bases of financial parameters. The study is conducted on 46 commercial banks public and private banks sectors were included on the size, growth, profitability and soundness and suggested eleven financial performance indicators. The findings highlighted that public and private sector banks were not very much different in terms of size and growth parameters.

3. DATA ANALYSIS AND INTERPRETATION

3.1. Fundamental analysis

Price-Earnings Ratio (PER): The PER depends on the market's perception of the risk and future growth in earnings. A company with a low PER indicates that the market perceives it as higher risk or lower growth or both as compared to a company with a higher PER. The PER of a listed company's share is the result of the collective perception of the market as to how risky the company is and what its earnings growth prospects are in

relation to that of other companies. Investors use the PER to compare their own perception of the risk and growth of a company against the market's collective perception of the risk and growth as reflected in the current PER. If the investor feels that his perception is superior to that of the market, he can make the decision to buy or sell accordingly.

$$\text{Price-earnings ratio} = \frac{\text{Market Price per share}}{\text{Earnings Per Share}}$$

Table 1: Price-earnings ratio

Years	SBI	ICICI
2014	194.25	214.62
2015	121.81	170.49
2016	93.28	144.92
2017	117.29	138.81
2018	14.97	31.40

Source: Annual Reports of Banks SBI, ICICI

Interpretation: From the table, it is observed that the Price earnings ratio of SBI & ICICI banks decreased in the five years. The ratio of SBI is 14.97 in 2018, which is lowest of the two banks. It is 194.25 in 2014 and it decreased steeply to 121.81 in 2015 and reached 14.97 in 2018 after fluctuating. PE ratio of ICICI is at 214.62 in 2014, but it has decreased considerably in 2015 to 170.49. After some fluctuation, it reached 31.40 in 2018. The price earnings ratio of ICICI is higher than the SBI Bank.

Earnings Per Share (EPS): It is used to know the fraction of total earnings per each share that is outstanding. This gives the Net profit earned by each share of the company. If EPS is higher, it means that profit per share is higher. It indicates profitability of the company.

$$\text{Earnings Per Share} = \frac{\text{Net Income} - \text{Preference Dividend}}{\text{No. of Equity Shares}}$$

Table 2: EPS – Earnings Per Share of SBI & ICICI

Years	SBI	ICICI
2014	11.61	4.47
2015	17.45	5.61
2016	20.62	7.22
2017	14.58	8.49
2018	17.55	9.64

Source: Annual Reports of Banks SBI & ICICI

Interpretation: The Earnings per share of the three banks are on rising trend. Ratio of SBI is at 11.61 in 2014. It has increased to 20.62 in the year 2016, reached 14.58 in 2017 and again increased slightly in 2018. ICICI bank has ratio of 4.47 in 2015, which is lowest in five years. From 2014, it steadily increased and reached to 9.64 in 2018. SBI bank has higher EPS when compared to ICICI bank.

Return on Net Worth: Return on Net Worth (RoNW) is the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. It is also called as Return on Equity (ROE).

Return on Net Worth is expressed as a percentage and calculated as:

$$\text{Return on Net Worth} = \frac{\text{Net Income}}{\text{Net Worth}}$$

Table 3: Return on Net Worth of SBI, & ICICI (in %)

Years	SBI	ICICI
2014	11.34	9.35
2015	13.95	10.70
2016	14.26	12.48
2017	9.20	13.40
2018	10.20	13.89

Source: Annual Reports of Banks SBI&ICICI

Interpretation: The RoNW of SBI in 2014 is 11.34. It has increased to 14.26 in 2016, but has decreases to 9.20 in 2017 and reached 10.20 in 2018. The RoNW of ICICI bank is 9.35 in 2014. From 2014, it has steadily increased to 13.89 in 2018. It has an increasing trend. RoNW of SBI is higher than ICICI bank.

Total Assets to Debt Ratio: This ratio measures the extent of the coverage of long-term debts by assets. It is calculated by dividing Total assets with Long-term debt. The higher ratio indicates that assets have been mainly financed by owner's funds and the long-term loans are adequately covered by assets. It is observed that in that case, the ratio is the reciprocal of the debt to capital employed ratio. Significance: This ratio primarily indicates the rate of external funds in financing the assets and the extent of coverage of their debts are covered by assets.

$$\text{Total Assets to Debt Ratio} = \frac{\text{Total Assets}}{\text{Total Debt}}$$

Table 4: Total Assets to Debt Ratio of SBI & ICICI Bank

Years	SBI	ICICI
2014	1.16	1.21
2015	1.140	1.20
2016	1.141	1.23
2017	1.136	1.22
2018	1.15	1.21

Source: Annual Reports of Banks SBI&ICICI

Interpretation: The ratio of SBI is 1.16 in 2014. It has reached lowest of 1.136 in 2017 after minor fl fluctuated and increased slightly to 1.15 in 2018 The ratio of ICICI bank increased is

1.21 in 2018. It decreased slightly to 1.20 in 2018 and reached to maximum of 1.23 in 2016. It reached to 1.21 in 2018. ICICI are higher than that of SBI.

Proprietary Ratio: The proprietary ratio is also known as the equity ratio. The propitiation of shareholders equity to total assets and such provides rough estimates the amount of capitalization currently used to support a business. If the ratio is high this indicates that a company has sufficient amount of equity to support the functions of the business, and probability has room in its financial structure to take on additional debt if necessary. A low ratio indicates that the business may be making use of too much debt or trade payables, rather than equity to support operations.

$$\text{Proprietary Ratio} = \frac{\text{ShareHolders Funds}}{\text{Total Assets}}$$

Table 5: Proprietary ratio of SBI Bank and ICICI bank

Years	SBI	ICICI
2014	5.31	13.56
2015	6.28	12.75
2016	6.31	12.43
2017	6.60	12.31
2018	6.27	12.45

Source: Annual Reports of Banks SBI&ICICI

Interpretation: Ratio of SBI slightly increased from 5.31 to 6.28 in 2015, and after minor fluctuations it reached to 6.27 in 2018 (from 5.31 in 2014). The ratio of ICICI is at 13.56 in 2014 which is the highest, but it has decreased from 2014, and reached 12.45 in 2018 after instability. The proprietary ratio of ICICI is higher than the SBI Bank and SBI has the lowest proprietary ratio of all the three banks.

3.2. Technical Analysis

Technical Analysis of SBI, ICICI Banks:

3.2.1. Trend analysis

The average share prices for the year are considered for analyzing the trend. The past trend for the share prices of the three stocks is as follows:

Table 6 Average share prices of SBI, and ICICI Bank

YEAR	SBI	ICICI
2014	2255.23	959.85
2015	2125.65	956.20
2016	1923.45	1045.87
2017	1710.92	1179.04
2018	262.73	302.63

Interpretation: The Average price of SBI is highest in 2014 at Rs.2255.23. It has continued to decline in the remaining years. It has steeply decreased in 2018 to 262.73. It is higher than SBI and ICICI in 2015. The price of ICICI has increased from 959.85 in 2014 to 1179.04 in 2017. It steeply declined to 302.63 in 2018.

3.3. Beta calculation for SBI and ICICI stocks Following formulas are used in the calculation of beta: Formula for Beta is:

$$\text{Beta } (\beta) = \frac{\text{covariance}(r_a, r_b)}{\text{variance}(r_b)}$$

$$\text{Where, covariance } (r_a, r_b) = \frac{\sum (x-\bar{x})(y-\bar{y})}{N}$$

$$\text{Variance } (r_b) = \frac{\sum (x-\bar{x})^2}{N}$$

Table 7: Beta (Yearly) for three stocks

YEAR	SBI	ICICI
2014	0.85	1.42
2015	1.69	1.86
2016	1.53	2.40
2017	1.04	1.28
2018	0.63	0.36

Interpretation: The beta of SBI is at 0.84 which is lower than other stocks in 2014. It steeply increased to 1.69 in 2015 and followed a declining trend in remaining years. It

reached 0.63 in 2018. The beta of ICICI is 1.42 in 2014, which is higher than SBI Bank. It increased to 1.86 in 2015 and reached maximum of 2.40 in 2018. In 2017 and 2018, it steeply decreased and reached a lowest beta 0.36 in 2015. In 2018, ICICI bank has highest beta and SBI has lowest beta.

4. Hypothesis Testing

Ho1: There is no correlation between the average share prices of SBI and ICICI

		SBI Bank	ICICI Bank
SBI_bank	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		.000
	N	5	5
ICICI_bank	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	.000	
	N	5	5

Interpretation: The above table revealed that the correlation of the average share prices between the SBI, and ICICI Bank at the significance level (2-tailed) of 0.000 the correlation value is 1.0000. It is concluded that person correlation value less than the 0.05. Hence there is no correlation between the average share prices of SBI, and ICICI Bank.

Ho3: Ho1: There is no correlation between the beta values of SBI and ICICI

		SBI Bank	ICICI Bank
SBI_bank	Pearson Correlation	1	.866
	Sig. (2-tailed)		.058
	N	5	5
ICICI_bank	Pearson Correlation	.866	1
	Sig. (2-tailed)	.058	
	N	5	5

Interpretation: The above table revealed that the correlation of beta values between the SBI, and ICICI at the significance level (2-tailed) of 0.058 the person correlation value is 0.866, It is concluded that person correlation value greater than the 0.05. Hence there is a correlation between the average share prices of SBI and ICICI Bank. It shows that the correlation between SBI and ICICI Bank there is a positive correlation.

5. Findings

Financial Analysis

PE ratio of all banks decreased in 2018. There was higher fluctuation of SBI and ICICI bank has consistent ratio from 2014 to 2018. The sudden change in PE ratio of SBI and ICICI is Due to the stock split from Face value of Rs. 10 of both banks to lower denomination i.e, Rs. 2 per share in 2017. Overall highest ratio in 2018 is of ICICI Bank at 31.40 and lowest is of SBI. ICICI is better in this respect.

EPS of SBI declined in 2017, but it has increased in 2018. EPS of ICICI bank have positive trend. ICICI has highest EPS in all the years. It shows that profitability of ICICI is higher when compared to SBI bank.

Return on Net Worth is stable for ICICI Bank it is an increasing trend. Ratio of SBI has decreased in 2017 and that of ICICI has decreased in 2018.

Total assets to debt ratio of SBI Bank has lowest ratio in all years and it slightly decreased in 2018. ICICI have similar levels and ICICI has highest ratio in 2018. The banks have sufficient assets to cover the debt.

Proprietary ratio of SBI Bank is lower than SBI Bank. Ratio of ICICI Bank is higher than SBI bank. Ratio of ICICI bank has slightly increased in 2018. It shows that ICICI bank has more assets funded with owners' or share holders funds. It has more capacity to bear the additional debt if necessary.

The trend of share prices

The trend of share prices, of SBI Bank and ICICI Bank is in a declining trend but steadily increased till 2018.

The price of SBI Bank suddenly declined to Rs.262.73 in 2018. This is due to the stock split announced by SBI Bank 2017. Similar decrease of ICICI Bank to Rs.302.63 is due to stock split announced in 2017.

6. Suggestions

The investors should understand the past performance of the companies before investing in the shares of those companies. Both the Fundamental analysis and Technical analysis should be used to study the stocks. Investors should understand the limitations of the techniques used in both Fundamental as well as technical analysis.

References

- [1] Shah R. Investment perception regarding Indian Financial markets. Abhinav International Monthly Refereed Journal of Research in Management & Technology 2015;4(6).
- [2] Annapoorna MS, Gupta P. A comparative analysis of returns of mutual fund schemes ranked 1 by CRISIL. Tactful management research journal 2013;2(1).
- [3] HanumanthaRao P, Dutta S. Fundamental Analysis of the Banking Sector in India. Indian Journal of Finance 2014.
- [4] Shukla S. Performance of the Indian Banking Industry: A Comparison of Public and Private Sector Banks. Indian Journal of finance 2015.
- [5] Kothari SP, Shanken J. Beta and Book-to-Market: Is the Glass Half Full or Half Empty. Sloan School of Management 1998.
- [6] Thamaraiselvi R, Anupama. An Analytical Study on Equity Research of Stocks in Banking Sector. Indian Journal of Finance 2008.
- [7] Jain S. Analysis of equity based mutual funds in india. OSR journal of business and management (IOSRJBM) 2012; 2(1): 1-4.
- [8] Narayanaswamy T, Muthulakshmi AP. Efficiency of Private Sector Banks in India. Indian Journal of Finance 2014.
- [9] www.moneycontrol.com
- [10] www.sbi.co.in
- [11] www.icicibank.com
- [12] www.in.finance.yahoo.com

Johar – An Initiative Towards Sustainable Development

SatyakiMitra*

Abstract

The development objective of the Jharkhand Opportunities for Harnessing Rural Growth (JOHAR) Project for India is to enhance and diversify household income in select farm and non-farm sectors for targeted beneficiaries in project areas. The project comprises of three components. The first component, diversified and resilient production and value addition will support collectives of small producers and interventions for diversification, intensification, and value addition in the selected subsectors of highvalue agriculture (HVA), livestock, non-timber forest produce (NTFP), fisheries, and irrigation. It consists of following sub-components: (i) rural producer collectives; (ii) highvalue agriculture development; (iii) livestock development; (iv) fishery development; (v) nontimber forest produce development; and (vi) irrigation system development. The second component will involve support for promoting market access and private sector participation, fostering skill development relevant to the focus value chains, and facilitating the development of pro-poor agricultural finance systems. It consists of following sub-components: (i) market access and private sector participation; (ii) skill, jobs, and enterprise development; and (iii) propoor agricultural finance systems. The third component, project and knowledge management objective is to establish effective project management and facilitate strong knowledge management.

Introduction

The Government of India, the Government of Jharkhand and the World Bank has signed a \$100 million loan agreement (total project cost being US\$ 143.00 million) in the year 2017, to help improve livelihoods and incomes of rural households in Jharkhand over the next six years. The project is known as Jharkhand Opportunities for Harnessing Rural Growth (JOHAR). Over 200,000 rural households and some 3,500 farmer producer groups are expected to benefit from the project with women as principal actors in production, processing and marketing. Women SHG members, including from scheduled castes and tribes, and smallholder and landless households from 17 districts and 68 blocks of rural Jharkhand are expected to benefit. The blocks were selected based on their potential for the selected sectors and sub-sectors in terms of local resources, production capability, proximity and access to market as well as the potential for transformative income augmentation.

The JOHAR project envisages on enhancing agricultural incomes through increased productivity, improved market linkages and value addition; supported by strengthening extension services and improving access to credit. The major emphasis is on economic integration and enhancing rural livelihood opportunities of the most disadvantaged groups including women. The project will support climate-resilient agriculture, access to agricultural markets, water and natural resources management. It will also support enhancement of rural livelihood opportunities through encouraging diversification,

*Assistant Professor of Commerce, St. Joseph's College, North Point, Darjeeling, West Bengal – 734 104

lowering production costs, strengthening market linkages, skill development and self-employment. The sources of investments include project support, state program convergence, partnership with the private sector and community contribution.

Project interventions will be focussing on the sub-sectors of High Value Agriculture, livestock, NTFP (non-timber forest produce), fisheries and irrigation. Although the project will work across these five sub-sectors, the typology of the interventions reaching each geographic cluster (15 villages in a block) of households will be limited to pre-determined primary and secondary sub-sectors. The sub-sector-wise outreach will be around 150,761 households for High Value Agriculture and Irrigation, 50992 households for livestock, 34,500 households for fishery and 58,400 households for NTFP interventions.

Besides coverage of the households into NRLM (National Rural Livelihood Mission)/SHG (Self Help Group) fold, vintage of community institutions, capitalization and their regional spread were also taken into account. The selection was also aligned with the priority of JSLPS (Jharkhand State Livelihood Promotion Society, an autonomous society of Govt. of Jharkhand) to extend the reach-out of NRLM programme in these blocks from FY 2017-18 onwards to the formation of SHGs, capitalization in SHGs and formation of VOs (Voluntary Organisations) to strengthen the social and organizational base for JOHAR. Therefore, the primary project beneficiaries are the rural households, the majority of whom will be women SHG members, including from SC, ST, and smallholder and landless households in selected blocks of rural Jharkhand.

Rationale behind the project and the relevance of the study

The state of Jharkhand was created in the year 2000. It is spread over an area of 79,714 sq. km. and is divided into 24 districts. The state has a population of about 33 million; 13 million of whom are poor. Of the total population, 76% is rural and 24% is urban. The tribal population accounts for 26% of the total population.

The spatial variation in poverty has been attributed to the differences in availability and use of natural resources and the community profile. The north-eastern part of the state (6 districts of Santhal Parganas) is mostly inhabited by the Santhal tribe who practice subsistence agriculture characterized by limited land and water resources, poor adoption of cropping practices and consequently low productivity. The central and western (parts) regions of the state have relatively less poverty. These are inhabited by the Oraons and Mahato communities who have adopted improved cropping practices involving well-based irrigation and cultivation of commercial crops such as vegetables. In the remaining regions of the state that are under rain fed and forest based livelihood system, lack of access and poor service delivery constraints growth, and there is significant dependence on wage labour.

While the female literacy rate of the state is much less than that of India (65%) at 55%, the overall child sex ratio (0-6 years, girls per 1000 boys) at 948 is better than that of the country as a whole (919). Access to basic water and sanitation is severely lacking with only about 15% households (and 7% of tribal households) having improved sources of drinking water (compared to India's 42%) and only about 22% households (and 8% of tribal households) having improved toilet facilities (compared to India's 47%). Malnourishment is a problem of serious proportions in the state – about half (47%) of the children under 5 years are stunted, one-third (16%) children are wasted, and about 42% are underweight. More than 70% of women and about 67% of adolescent girls in the state are anaemic.

The share of the industry sector has declined from 52 percent in 2004-05 to 35 percent in 2015-16. The share of agriculture and allied sector has increased from about 15 percent to 17 percent in the same period. Jharkhand has significant gaps in infrastructure: only about 45% of rural households have electricity and the road density in the state is 105 km (per 1000 sq. km) compared to India's 182 km.

The performance of the state economy in recent years has been impressive – with the income of the state doubling in the last eleven years. The Gross State Domestic Product (GSDP) which was INR 597,580 million in 2004-05 was estimated to be INR 1,292,250 million in 2015-16. While the service sector has been the key performer in Jharkhand's economy growing at an average annual rate of about 11 percent between 2004-05 and 2015-16, the agriculture and allied sector followed with a growth rate of 8.6 percent. The industrial sector lagged behind with an average rate of 3.38 percent. Horticulture and livestock are among the fastest growing sectors in Jharkhand. The state has made rapid progress in horticulture with around 4.27 lakh hectares under vegetables and fruits (out of the net sown area of 23.62 lakh hectares) and an all-India ranking within 10 for several vegetable crops. Livestock too is a high-value option for landless households. Market prices for meat and eggs have increased by 70–100 percent in the past decade in local markets and have also pushed up farm gate prices. The state has maintained a high growth rate of 17.23 percent in fish production over the past 11 years, despite limitations such as dependence on seasonal water bodies and recurrent droughts and contributes to 60 per cent of the country's production in non-timber forest products

But it is a fact that, the liberalization and privatization of Indian agriculture saw the State withdrawing from many productive and economic functions, a space that was readily claimed by the private agribusiness sector. The small farmers are at the receiving end – his livelihood is threatened in an environment of instability, competition and fragmentation of farm holdings. Farmers face many issues including lack of access to credit and the market, and technology adoption. All these issues have created a need for mutual support and collective actions at the farmer level. Besides, in agricultural marketing, there is a long chain of intermediaries who very often work non-transparently leading to the situation where the producer receives only a small part of the value that the ultimate consumer pays.

It is now felt and has been proven that any market intervention planned for poor will not be effective until it is planned to be done through collective actions. Thus the main thrust in JOHAR project is given on creating and strengthening of Producer Groups (PG) and Producer Organizations (PO) so that farmers can work in a collective way in getting better market access and hence better returns for the producers i.e. farmers. The key strategy adopted is to promote collectives of small producers with significant participation of women producers which will ensure that the producer collectives are socially inclusive. Producer Groups (PG) will be promoted at the village level and Producer Organizations will be promoted at the District or higher level and to facilitate the productivity enhancement activities for the selected producers support will be provided through the Community Service Providers (CSPs) of ongoing NRLM and NRLP (National Rural Livelihood Programme) projects. CSPs will address to the need of capacity gaps of the community in terms of dealing with the markets. These capacity building would be in the fields of financial literacy, business education, business management, market assessment, negotiation skills and so on. They will also provide a platform for upgrading the skills of the community in the field of input management, productivity enhancement and climate

resilience strategy through technology dissemination. Thus, JOHAR will support producer collectives, improve production in all value added sectors, develop capacities of producers on post-harvest management and marketing and deliver skills training for community cadres and entrepreneurs. Given the smallholdings of farmers and their relative inability to make large investments individually, JOHAR will support micro-scale irrigation schemes that are community owned, operated and maintained. New irrigation structures will include, among others, construction of farm ponds, lift irrigation schemes, and shallow wells. JOHAR will converge with the Government of Jharkhand's existing programs on irrigation, watershed development and on-farm water use efficiency to maximize the sustainability and impact of water management interventions.

At present, 13.5 percent of the net sown area in Jharkhand has access to irrigation and only 5.72 percent of rural households own any irrigation equipment. The Government of Jharkhand is making efforts to enhance available resources through rainwater harvesting and watershed management, and scaling up water-use efficiency through micro-irrigation. There are many reasons of concern towards the sustainable development of agricultural and allied sectors. These are:

- Prevalence of traditional practices and low awareness of new technologies
- Inadequate access to Government schemes supporting agriculture
- Weak institutional structures at grass root level
- Insufficient access to financial resources for agriculture
- Lack of Infrastructure for processing, logistics, storage etc.
- Lack of facilitation in integration of different value chain players
- Lack of Availability of quality inputs for vegetable & horticulture production
- Lack of adequate soil testing facilities
- Lack of Availability of appropriate Farm machinery
- Inefficient marketing structure and non-availability of alternative markets

The following tables will further add on the necessity of and rationale behind initiating a project like JOHAR:

Table 1: Indicators with reference to agriculture sector

S.No	Indicators	India 2008-09	Jharkhand 2008-09
1	Per capita availability of food grains (g)	583.0	250.0
2	Cropping intensity (%)	140.0	116.0
3	Area irrigated (%)	35.4	13.0
4	Fertiliser consumption (kg/ha)	140.0	65.0
5	Productivity of agricultural crops (t/ha)		
	- Rice	2.2	2.0
	- Fruits	15.0	12.3
	- Vegetables	17.0	15.0
6	Soil fertility status (% deficiency)		
	- N	63.0	80.0
	- P	42.0	80.0
	- K	13.0	50.0
7	Agricultural workers (%)		
	- Cultivators	31.7	38.5

S.No	Indicators	India 2008-09	Jharkhand 2008-09
8	Average size of operational holdings (% households having less than 2 ha)	78.3	72.9
9	Per cent population below poverty (%)	26.1	46.0
10	Per cent population with food security (%)	97.7	87.5
11	Capacity utilisation of soil testing labs (%)	587.3	21.5
12	Seed replacement ratio (%)	33.0	5.0

Sources: Draft Twelfth Five Year Plan (2012–2017) and Annual Plan (2012-2013), PDD, GoJ.

Table 2: Demand and Supply of Fruits & Vegetables in Jharkhand

Year	Demand (MT in millions)		Supply at Existing Rate of Growth (MT in millions)		Deficient or Surplus (MT in millions)	
	Fruits	Vegetables	Fruits	Vegetables	Fruits	Vegetables
2013	1.52	3.50	0.85	3.90	-0.67	0.40
2017	1.61	4.10	0.93	5.57	-0.69	1.47
2022	1.71	4.73	1.15	6.81	-0.55	2.08

Source: ICAR: Draft of Jharkhand Agriculture Development Vision

Project Objectives

The overall Project Development Objective (PDO) is 'Enhanced and diversified household income in select farm and non-farm sectors for targeted beneficiaries in Project Area'. The project would achieve the PDO by:

- a) Mobilizing and aggregating rural producers including women and men from SC/ST and smallholder households into producer groups and organizations, with focus on diversification and/or intensification of their current production system, and, improving their participation higher up in the value chain;
- b) Strengthening the competitive advantage of target rural producers by transfer of resilient production techniques, enhanced opportunities for value addition and effective market linkages;
- c) Improving access to financing, including innovative financial products, through the community institution platform and through commercial banks;
- d) Establishing partnerships with the private sector, including rural entrepreneurs, for effective forward and backward linkages with producers;
- e) Supporting skill development and financing modalities to facilitate jobs and entrepreneurship with a focus on the value chain and agri-business.

Project design and components

Project activities are grouped under 3 components, they are –

Component 1 - Diversified and resilient production and value addition:The objective of this component is to promote sustainable production through productivity enhancement, diversification, building resilience into production systems including crop, efficient horticulture, small livestock (including fisheries), and NTFP and creating improved skills and capacities across all the sub-sectors. The component will finance farm/non-farm sector inputs and innovative technologies, training on package of practices, pilots and demonstrations for farmers, while supplementary financing will be leveraged through a number of alternative channels such as convergence with government programs, SHG/VO micro-financing and from formal financial institutions.

(a) The sub components under this are:

- Sub-component 1.1 Rural Producer Collectives
- Sub-component 1.2 High-Value Agriculture Development
- Sub-component 1.3 Livestock Development
- Sub-component 1.4 Fishery Development
- Sub-component 1.5 Non-Timber Forest Produce Development
- Sub-component 1.6 Irrigation System Development

Component 2 - Promoting Market Access, Skill Development and Pro-poor Finance: This will involve support for promoting market access and private sector participation; fostering skill development relevant to the focus value chains; and, facilitating the development of pro-poor agricultural finance systems. The objective of this component is developing and strengthening forward linkages to markets for rural producers in farm and non-farm sectors (namely agriculture, horticulture, fisheries, small livestock and NTFP). The component will primarily provide: financing for capacity building of the producer organizations in business planning; initial capital investment and working capital financing to producer organizations; small-scale infrastructure for value addition; delivery of market information/intelligence; and provision of skills and jobs through training and capacity building.

(b) The sub components under this are:

- Sub-component 2.1 Market Access and Private Sector Participation
- Sub-component 2.2 Skill Development in Focus Value Chains
- Sub-component 2.3 Financial Services for Agriculture and Allied Sectors

Component 3 - Project Management: This will involve support for project and knowledge management. This component would facilitate overall coordination, implementation, financial management and monitoring (as well as learning) for the project at the state and district levels. It would include setting up and strengthening state- and district-level Project Coordination Units in JSLPS, providing office infrastructure and logistic support, and setting up monitoring and evaluation and MIS/GIS. It will finance salaries and other benefits to staff and consultants engaged in project implementation, resource/support agencies and service providers, and other operational expenses.

Conclusion, recommendations and scope for future researches

The development objective of the Jharkhand Opportunities for Harnessing Rural Growth (JOHAR) Project is to enhance and diversify household income in select farm and nonfarm sectors for targeted beneficiaries in project areas. From the above analysis this can be emphasized that, JOHAR aims at empowering and transforming the incomes of rural poor, specially women, through market-led interventions for agriculture, livestock and NTFP Sectors. JOHAR would try to work on market based gaps in terms of capacities,

institutions, collectivization, infrastructure, finances and other services as promised in the overall project implementation plan.

Since there lies a darker side of every positive initiative, JOHAR is also not exempted from the possible limitations. Some of the negative impacts and mitigation measures include: (1) avoid clearing of vegetation to the extent possible; (2) dispose the excavated wastes in proper manner at the borrow sites or landfills; (3) need to follow the regulator measures that do not support the overexploitation of water resources; (4) promotion of water saving technologies like sprinkler and drip irrigation; (5) drainage should not be let into potable catchment area but channeled separately; (6) regular cleaning maintenance of the channel and most importantly (7) it should ensure that there would be no compulsory private land acquisition.

If we can overcome the above noted limitations, then by studying the project development objectives (PDO), this can be rightly said that, JOHAR project is going to benefit the Government of Jharkhand in enhancing and diversifying household incomes in the farm and non-farm sectors of Jharkhand in the near future. It is expected that the various components and sub-components of JOHAR will surely help in achieving the PDO by –

1. Increasing the average annual household income (real)
2. Increasing the proportion of income (real) from select productive livelihoods sources
3. Increasing the number of female farmers reached with agricultural assets or services
4. Increasing the number of project beneficiaries that belong to SC/ST categories
5. Promoting financial capability through standard financial education and thus the idea of financial inclusion
6. Promoting Food Security and Nutrition awareness measures and by addressing the issue of ensuring the process of maternal malnourishment
7. Addressing the issue of gender disaggregated information on participation of women and men producers across project components
8. Promoting sustained participatory planning for procurement, production, community irrigation, horticulture, fisheries, livestock development, business operations, markets and value chains

However, it would be too early to judge the effects of JOHAR on the socio-economic development of Jharkhand, since the project is initiated only in 2017 and the actual implementation took place just a few months back in the year 2018. Hopefully, this project would be a grand success for the upliftment of the rural poor of Jharkhand and would ensure a sustainable socio-economic development. It is expected that the JOHAR project would also open the avenues for new researches relating to agriculture, economy, society, environment, development and different facets of management. Research may also be conducted on special women-focused thematic studies. The project has the potentiality to develop an eco-system for research and innovation and attract National Institutions (such as ICAR institutions, KVK, agricultural or other universities, non-governmental organizations, and companies) and Centers of Excellence to Jharkhand to bridge the knowledge and technology gaps in the project.

References

1. *Jharkhand Economic Survey 2015-16*. Planning cum Finance Department, Government of Jharkhand.
2. *Jharkhand – Poverty, Growth & Inequality*. May 2016. World Bank Group.
3. Mehta, B S and Singh, B. *Employment and Poverty in Jharkhand and India*. IJHSS. Volume II, Issue V, March 2016. Pages 311-323.
4. *Vision 2030*. Bisra Agricultural University. www.baujharkhand.org.
5. Petare, K. et al. *Livelihood system assessment and planning for poverty alleviation: a case of rainfed agriculture in Jharkhand*. Current Science, Vol. 110, No. 9, 10 May 2016.
6. *Jharkhand Social Sector Statistics, 2014*. Department of Planning and Development, Government of Jharkhand.
7. Unicef. November 2015. Viewed at <http://unicef.in/PressReleases/400/Jharkhand-Nutrition-Mission-Launched->.
8. *Agricultural Technology Modules for Jharkhand*. Bisra Agricultural University. www.baujharkhand.org
9. Department of Agriculture and Cane Development, Government of Jharkhand. Viewed at <http://agri.jharkhand.gov.in/?ulink=dept/stateprofile.asp>
10. Agarwal, B. K. *Soil Health in Jharkhand*. Bisra Agricultural University.
11. *Jharkhand State Water Policy 2011*. Water Resources Department, Government of Jharkhand.
12. *Land use Statistics*. Ministry of Agriculture, Government of India. 2012-13.
13. *Land Use Statistics at a Glance – State Wise*. Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare. Viewed at http://eands.dacnet.nic.in/LUS_2012-13/lus_2012-13.xls
14. Shah, T. et al. *HarKhetKoPani (Water to Every Farm)*. IWMI-Tata Policy Paper. June 2016.
15. 2012-13. *National Horticulture Production Database*. Ministry of Agriculture. Government of India.
16. Other Websites retrieved:
<https://avrdc.org/largest-worldveg-projects-in-india-inaugurated/>
<http://jslps.consoleindiainc.net/wp-content/uploads/2017/02/REOI-for-Monitoring-Evaluation-for-JOHAR-Final.pdf>
<http://jslps.consoleindiainc.net/wp-content/uploads/2017/02/REOI-for-Irrigation-Consultancy-sevice-for-JOHAR.pdf>
<http://jharkhandstatenews.com/article/grapevine/19/world-bank-jharkhand-govt-sign-agreement-for-100-million-poverty-eradication-project-johar/>

Impact Of Quality Factors On Tourist Satisfaction – A Study Of Houseboat In Kerala

Shiji Mohan. N*

Dr. M.K. Muhammed Aslam**

Abstract

Tourism industry is one of the most important service industry in the present scenario. The study of tourist satisfaction is one of the most relevant areas of research for the tourism sector; as satisfied tourist tend to transmit their positive experience to others. This paper investigates, to find out the quality factors affecting houseboat tourist satisfaction. The primary data was collected from the tourist who visited houseboat during the month of March- June 2015. The findings from the results show that different quality factors are affected tourist satisfaction, in this, attraction quality and food quality are the most significant factors affecting the satisfaction of tourist.

Keywords: Tourist satisfaction, Quality factors, Houseboat tourism.

Introduction

Tourism in India is going through a significant phase of growth and development. Kerala is blessed with nature and is one of the prime tourism destinations on the national and international scenario. Kerala is unique for its interesting geographical diversity it possesses within the smallest area possible. This diversity offers tourists a range of attractions and experience such as beaches, backwaters, wildlife sanctuaries, evergreen forests and diverse flora and fauna of Kerala. It has a number of natural lakes or lagoons and backwaters estuaries along with numerous rivers and their tributaries make Kerala a land rich in water resources and a great tourist destinations. Kerala being moving to be a totally consumer state, development of tourism has changed as one of the major source of income. Kerala is fondly referred to as 'God's Own Country'. Alleppey, also known as "The Venice Of East", is one of the best attractions of Kerala and this place is well known for its natural beauty. Alleppey is strongly connected by waterways to various other parts of Kerala, including the famous tourist destination, Kuttanaad(Isacc george, 2012). The backwater tourism is the major attraction of the Kerala tourism. The largest backwater stretch in Kerala is the Vembanad Lake which flows through Alappuzha and Kottayam districts and opens out into the sea at the Kochi port. Cruising through the backwaters in a houseboat or any other boat is termed as backwater tourism. The major component of backwater tourism is houseboat tourism. Today houseboat tourism is the most important tourist product of Kerala (Varughese, 2013). The success or failure of any tourism business depends upon the satisfaction of tourists. In a marketing research the understanding of tourist satisfaction is a popular topic.

Houseboat

A boat that serves as a place of residence is called a houseboat. In tourism technology it is also called boatel or floating hotel. These houseboats are moored in a permanent location.

* Research Scholar, SMS, CUSAT, Cochin

** Associate Professor, SMS, CUSAT, Cochin

Its permanent location distinguishes it from the floating hotels of the rest of the world where such boats mostly tend to be mobile. (Ali, 2013)

Research Problem of the study

Quality factors and tourist satisfaction have long been recognized as playing a crucial role for success and survival in today's competitive market (Fen, 2009). Understanding of Houseboat Tourist satisfaction contributes a central role in the planning of marketing this tourism product and services. It is generally recognized that satisfaction is impacted directly by service quality. Therefore if service quality is improved then satisfaction will be improved (Luan, 2015). The present study analyzed the major quality factors influencing houseboat tourist satisfaction in Kerala and the relationship between service quality factors and houseboat tourist satisfaction.

Objectives of the study

1. To identify the impact of Houseboat service quality factors influencing the houseboat tourist satisfaction.
2. To identify the relationship between houseboat service quality factors and houseboat tourist satisfaction.

Theoretical background of the study

Service Quality Factors

In the highly competitive tourism industry, service becomes one of the most important elements for gaining a sustainable competitive advantage in the market place (Raspor) and it has been identified as the key factors in maintain destination competitiveness (canny, 2013). Research on service quality becomes a major concern in tourism and hospitality industry, since these industries basically dealing with people-oriented service delivery. The term service quality construct is conceptualized in the context of service marketing literature (Yoo, 2010). During the last few years a variety of service quality studies have been conducted (Yang, 2004). In the hospitality industry, several studies have examined the major quality attributes that guest may find important when evaluating the performed service quality (Heung, 2000). Literature suggests that cleanliness (Knutson B P Stevens, 1991), security and safety, empathy (Knutson, 1988). food, physical surrounding and service rendered by employees should be seen as a vital components that directly influence the guests perception of quality delivered by a restaurant (Jang, 2008). (Bjellic, 2014) measured the impact of atmosphere and perceived price on revisit intentions, both direct and indirect effects were measured.

Tourist satisfaction

Understanding what drives satisfaction for a tourist is one of the most relevant areas of research for the tourism industry (Armario) because satisfied tourists tend to share their positive experience to others. (Fen, 2009). For this reason the study of houseboat tourist satisfaction has been a priority subject of research in recent years. Improvement in performance quality and satisfaction will result in retention or expansion of tourist numbers, more vociferous and active tourism support, and ultimately enhanced profitability and political support. (Baker, 2000). Performance quality is conceptualized as a measure of a provider's output, whereas level of satisfaction is concerned with measuring a tourist's outcome. All else equal, higher quality performance in facility provision, programming, and service are likely to result in a higher level of visitor satisfaction. (Baker, 2000).

In marketing literature the concept of customer satisfaction is the main outcome of marketing practices and occupies an important position in both theory and practice (malik, 2012). Oliver who defined satisfaction as “ a function of an initial standard and some perceived discrepancy from the initial reference point”. He also stated. “ satisfaction soon decays into one’s overall attitude toward purchasing products.....or quality”.(Baker, 2000). In this present study food quality, staff quality, safety and security, quality of attraction factors were used to examine the term houseboat tourist satisfaction.

Hypothesis

Research hypotheses were constructed based on previous research and a theory with respect to the relationship among service quality factors and houseboat tourist satisfaction. Research hypotheses was as follows

H1:- There is a significant positive relationship between Houseboat Service Quality factors and Houseboat Tourist Satisfaction

Research Methodology

This study is mainly descriptive cum explanatory in nature. The target population of the study was those domestic tourist who visited in houseboat during the month of March-June 2015. A sample size of 100 domestic tourists from Alappuzha Districts in Kerala was taken for the study. This place is chosen for the main reason is that most of the houseboat tourism are mainly focused in the Alappuzha District. Primary and secondary methods were used for data collection. Convenience sampling method was used for primary data collection and questionnaires consists 20 questions. For the purpose of analyzing the collection of data, factor analysis was used. In this study both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were applied in the current study to understand which factor affect the houseboat tourist satisfaction.

Analysis and Discussions

Characteristics of the sample

A frequency analysis was employed to survey the distribution of various variables based on demographic profiles, such as Gender, age, education level, employment status, marital status. The findings regarding demographic information of tourist have indicated that 66(65.3%)of the respondents were male tourist; 34 were female tourists. That is majority of the respondents were male tourists. (Table 1)

Demographic Characteristics of Respondent

Table 1 Gender

Characristics	Frequency	Percent
Male	66	65.3
Female	34	34.7
Total	100	100

More than half of the respondents described being were single (n=67, 66.3%) and married (n=33, 33.7%). (Table 2).

Table 2 Marital status

Characristics	Frequency	Percent
Married	33	33.7
Unmarrid	67	66.3
Total	100	100

Of the total participants, 42 (42.1%) were ages between 26 to 35 years; 23(22.8%) were between 15 and 25 ages; 14(13.9%) between 36 and 45 ages; 13(12.9%) were age limit between 46 and 55; and 8 were age of 56-65.(Table3)

Table 3 Age

Characristics	Frequency	Percent
15-25	23	22.8
26-35	42	41.6
36-45	14	13.9
46-55	13	12.9
56-65	8	8
Total	100	100

With regard to tourists educational level, the majority of respondents had a bachelor degree (n=36, 35.6%); followed by master degree (n= 26, 25.7%) and others 22. (Table 4)

Table 4 Employment Qualifications

Charactristics	Frequency	Percent
Senior secondary	16	15.8
Bachelors degree	36	35.6
Masters degree	26	25.7
Professional degree	14	13.9
Others	2	2.0

The result finally demonstrate that majority of respondents were more likely to be male persons. The age group of 26 to 53 years accounted for 42% of the respondents. With respect to educational qualifications, table 4 shows that respondents were mostly bachelor degree 36%. And most of the respondents were unmarried persons.

Factor Analysis

Exploratory factor analysis (EFA) with Varimax rotation was employed to survey data to identify the dimensions of Quality factors of the tourist satisfaction. The assumptions of factor analysis were conducted by the Bartlett test of sphericity and the measure of sampling adequacy.

The factors with Eigen values greater than 1.0 were considered significant. An initial step to conducting principal components analysis with orthogonal Varimax rotation was to firstly carry out the Bartlett test of sphericity value and the Kaiser-Meyer-Olkin (KMO) overall measure of sampling adequacy, in order to confirm the acceptability of the factor examination. The KMO score of sampling adequacy was reported on .893, while the Barlett test of sphericity had a value of 3036.004, df of 190 (p value = .000). Both examinations indicated that factor analysis was suitable for this study. This result showed that the data matrix was appropriate to have factor analysis performed on it.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.893
Bartlett's Test of Sphericity	Approx. Chi-Square	3036.004
	df	190
	Sig.	.000

The present study employed a reliability analysis to determine the reliability and consistency of the measurement scales used in this study. Cronbach's alpha was employed to assess the reliability of the measurement scale of the study.

Food Quality

Cronbach's Alpha	N of Items
.956	6

Staff Quality

Cronbach's Alpha	N of Items
.935	4

Safety and Security

Cronbach's Alpha	N of Items
.894	3

Quality of Attraction

Cronbach's Alpha	N of Items
.950	7

Analysis findings indicated that the Cronbach's α values for the various dimensions were as follows: 0.956 for food quality factors; 0.935 for staff quality factors; 0.894 for safety and security factors; 0.950 for quality of attraction factors; and 0.988 for houseboat tourist satisfaction. Because Nunnally (1978) and Nunnally and Bernstein (1994) determined that α values exceeding 0.7 are acceptable, all the dimensions proposed in this study reached appropriate reliability levels.

Houseboat tourist

Satisfaction

Cronbach's Alpha	N of Items
.988	4

The results shows that service quality has a significant positive effect on houseboat tourist Satisfaction, providing support for H1. So alternative hypotheses was accepted. And also the results of the correlation coefficient shows the significant relationship between dependent variable and independent variable. Statistical results showed that houseboat travelers have four subcomponents on perceived service quality factors . The components are “Food Quality”, “Staff Quality”, “Safety and Security”, and “Quality of Attraction”. Among them “Quality of Attraction “ was the most significant component to directly affect houseboat tourist satisfaction. The factor solution was obtained using eigen values greater than 1 and varimax rotation that resulted in a four -factor solution accounting for 77.01% of the total variance.

Correlations

		fqttotal	sqttotal	qatotal	ssqtootal	satttotal
satttotal	Pearson Correlation	.830**	.747**	.853**	.766**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	100	100	100	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

Conclusions

The results of present study will help the Government of Tourism department and any other responsible agencies to develop marketing strategies which are suitable for the development of houseboat tourism industry. The managements should pay attention on sufficient training to employees how fast and accurate to response and resolve their customer s requests and also do not wastes of customers time to do any transaction.

Reference

1. Ali, A. S. (2013). Houseboat- A component of tourism industry in Kashmir. *ICBEMS*, (pp. 90-93). Hong China.
2. Armario, E. M. (n.d.). Tourist satisfaction: An analysis of its Antecedents.
3. Baker, D. a. (2000). quality,satisfacton and behavioural intention. *Annals of Tourism Research* .
4. Bjellic, V. M. (2014). The antecedents of satisfaction and revisit intentions for full service restaurants. *Marketing Intelligence and Planning* , 311-327.
5. canny, I. (2013). An Empirical Investigation of Service Quality, Tourist satisfaction and behavioural intentions among domestic local tourist at borodur temple.
6. Fen, Y. S. (2009). Service Quality and Customer Satisfaction: Antecedents of customers re patronage intentions.
7. Heung, V. (2000). Satisfaction levels of mainland chinese travelers with Hong Kong Hotel services. *Emerald Insight* , 308-315.
8. Isacc. (2012). A Study to analyze the Satisfaction Level of Tourists relating to facility available in the.
9. Isacc george, S. K. (2012). A Study to analyze the Satisfaction Level of Tourists relating to facility available in the. *IJEMR* .
10. Jang, N. Y. (2008). Are highly satisfied restaurant customers really different? A quality perception perspective. *International Journal of Contemporary Hospitality Management*, 142-155.

11. Knutson B P Stevens, C. W. (1991). LODGSERV: A service quality index for the lodging industry. *Hospitality Research Journal* , 277-284.
12. Knutson. (1988). Frequent Travellers: Making them happy and bringing them back. *The Cornell hotel and restaurant administration* , 83-87.
13. Luan. (2015). Factors affecting tourists satisfaction towards Nam Cat tien National Park, Vietnam. A mediation analysis of Perceived Value.
14. malik. (2012). Customer Satisfaction, Perceived Service Quality. *International Journal of Marketing Studies* .
15. Raspor, S. M. (n.d.). Measuring Perceived Service Quality Using SERVQUAL: A case study of the Croatian Hotel Industry.
16. Varughese, A. (2013). Problems and Prospectus of Backwater Tourism in Kerala with special reference to Alappuzha District . *Indian Journal of Marketing* , 18-28.
17. Yang, Y. W.-P. (2004). An integrated framework for service Quality, Customer Value, Satisfaction: Evidence from China's Telecommunication Industry . *Information System Frontiers* , 325-340.
18. Yoo, L. H. (2010). The determinants of perceived service quality and its relationship with satisfaction. *Journal of Service Marketing* , 195-209.

Developing Security Algorithm For Smart Grid

Shalu saini*

Abstract

Smart Grid is an advanced electric grid that integrates communication coordinate with power framework parts for unsettling influence free power appropriation. It screens and controls every one of the exercises of the grid with the assistance of communication networks. The framework used to quantify, gather and investigate the power utilization subtleties of end client is named as Advanced Metering Infrastructure (AMI). It includes sensors for measuring power utilization subtleties of every gadget, smart meters, data concentrators, server and different telecommunication networks. This multifaceted nature introduces different digital assaults on meter data. The solid power conveyance to end client relies upon the power utilization data got from the smart meter. Henceforth, the protected transmission of smart meter data is basic. This proposal introduces the information and system security algorithms for securing the communications of smart meter data. The smart meter is a gadget extraordinarily intended to gather and transmit the power utilization subtleties of the end client gadgets to control server. Security is a noteworthy worry in the meter data transmission. The adjustment of meter data could cause financial misfortune during billing, bogus expectation of required vitality, physical harm to the gear, and so forth. The disclosing of data screens the client exercises that indirectly cause assaults like robbery, and so on. Thus, it is basic to guarantee privacy and integrity of meter data during transmission. In this theory, an improved Euclidean algorithm is proposed to accomplish the classification of smart meter data and bit masking based accumulation conspire is utilized to guarantee the integrity of scrambled data during transmission. The security and performance of the proposed algorithms are assessed by simulating AMI communication in MATLAB.

Keywords - *Advanced Metering Infrastructure (AMI), MATLAB, Smart Grid, Smart Meter Data*

1. Introduction

The upgraded utilization of electrical and electronic machines in different applications increases the power prerequisite of every nation. The existing electrical grid endeavors to give uninterrupted power supply yet every now and again faces power outages. Over the most recent two decades, huge numbers of the countries on the planet like India, Italy, United States, and so on have the most noticeably bad experience because of the power outages. A huge number of individuals have experienced these power outages. The poor monitoring and controlling alternatives in the existing grid is a noteworthy purpose behind the event of these power outages. The quickest developing information and communication advances can give answer for this issue. This prompts the development of electrical grid with advanced communication arrange named as Smart grid. Smart grid is an advanced electric grid that integrates PC and communication connect with power framework parts for ongoing monitoring, control and unsettling influence free power circulation. It has the

* Rajiv Gandhi Govt. College for Women, Bhiwani, Extension lecturer in computer science

qualities of bidirectional power and information stream for continuous monitoring and controlling of the activities related with the grid. The engineering of a smart grid is appeared in Figure 1 [4]. It very well may be part into age, transmission, conveyance, client, specialist organization, markets and control server [14]. Every one of the locales are independent in nature and are interconnected by the communication organize for the viable functioning of the grid. The control server is in charge of the considerable number of exercises of the grid that sends directions and gets data through the communication networks.

The smart grid is planned with the point of conveying power to the client with no unsettling influence. Aside from that, it has a few preferences over the customary grid. Some of them are,

- Avoid blackouts by online estimation of intensity utilization subtleties of the machines and the expectations of intensity prerequisites of the considerable number of gadgets in the grid
- Automatic perusing of meter data through remote networks
- Customer association in Demand side management
- Efficient burglary detection plans
- Integrate all the power age and capacity gadgets
- Self-recuperating on account of harm happens
- Resilience against different physical and digital assaults. To use these advantages, the gadgets like smart meter, phasor estimation unit, and so forth are required alongside rapid bidirectional communication arrange. The subtleties of intensity utilization and the solicitations from clients need to achieve the server immediately for nonstop power supply.

2. Literature Survey

In smart grid, the dependability of intensity dispersion relies upon the solid data got from the smart meter. Cryptography is an essential data security giving strategy where key management assumes a noteworthy job. At times, it is anything but difficult to foresee the client conduct by breaking down the traffic happen over the communication medium and should be verified for accomplishing security. A few algorithms like substitution cipher, ceaser cipher, and so forth are declined for verifying the private information amid the transmission. The ciphertext created by these traditional ciphers is effectively revealed by the advanced advances. Consequently, the advanced security instruments like Advanced Encryption Standard (AES), RSA, and so forth are created and utilized these days for verifying the data at system and communication medium amid transmission.

2.1 Review Of Security Algorithms For Meter Data

2.1.1 Data Encryption

Smart meter data are effectively defenseless against assaults and the alteration of data could make overwhelming monetary misfortune and harm the grid. Smart meter likewise produces the mass measure of data and achieves the server at least inertness with no misfortune. Subsequently, the security algorithms used to encode the meter data have the normal for giving high security and less encryption time.

As per the ANSI C12.22 standard, AES is indicated as the confirmed encryption calculation [19]. X.509 testament is likewise utilized for building up cryptographic sessions among smart meters however the NIST suggests not utilizing the authentication for secure sharing of touchy information [21]. Hur et al. [5] proposed a strategy based

encryption conspire named ciphertext arrangement characteristic based encryption with a concealed approach for secure sharing of smart grid data. He likewise recommends that could be reasonable for secure sharing of grid data. The downside of arrangement based encryption for the meter data security is its execution unpredictability. Ford et al. [2] proposed a convention for giving protection, secrecy and trustworthiness of the vitality utilization data. The convention underpins the examination of extortion detection, time-of-utilization charging and request accordingly.

2.1.2 Data Aggregation

Remote work organize is proposed as an appropriate communication innovation for smart meter communication [8]. In work topology, the data are gathered by the control server utilizing data aggregation process. A hub is chosen as data aggregator that gathers the data from every one of the hubs and totals that data. The amassed data are transmitted to the control server where the first data is recovered by the turnaround of the aggregation procedure. As indicated by data aggregation convention, the meter data are required at like clockwork for productive observing and control reason [9]. This brief term uncovers the security of the client. Subsequently, the data accumulation in meter communication gives protection, secrecy and honesty alongside the aggregation of data. Homomorphic encryption is utilized in numerous aggregation plans for the encryption of smart meter data that can be executed by applying logarithmic activity on the plaintext [27].

2.1.3 Key Management Systems

The cryptographic key is the most vital segment of encryption and aggregation conventions and the dependability of the algorithms relies upon the security of the keys. In smart meter communication, reasonable key management system is required for the age, dispersion and intermittent reviving of keys. Metke et al. [12] trusted that open key infrastructure (PKI) based key management system ought to be appropriate for a substantial systems like the smart grid. Kamto et al. [6] proposed a lightweight key conveyance system utilizing bunch ID and open key got from the declaration expert. This technique expands the weight of the declaration expert. Thomas et al [23] proposed a key circulation system that beats the issue by decreasing the weight of the authentication specialist. Liu et al. [10] proposed a half and half key management system for unicast, multicast and communicate communication, however it experiences the de-synchronization assault [25]. A protected key appropriation system utilizing believed outsider is proposed by Xia et al. [26] that has no key renouncement issues and the duplication of the outsider is conceivable amid power blackouts happen.

2.2 Review Of Intrusion Detection System For Meter Data Communication

Aside from secrecy and trustworthiness of data, accessibility of the data is fundamental for different utilizations of smart grid. It relies upon the dependability of remote work organize utilized in the AMI communication. The idea of WMN communication makes it as a simple casualty of assaults. Thus, the intrusion detection system is utilized to recognize the assaults and report it to the executive for taking essential activities that guarantee the accessibility of the system. It goes about as the second layer of resistance that distinguishes the assaults and defilement of data.

3. Components Of Advanced Metering Infrastructure

Advanced Metering Infrastructure has different components for the communication of family unit gadgets with control server. A portion of the critical components are smart

meter, data concentrator, Meter Data Management System (MDMS) and different communication networks.

3.1 Smart Meter

A smart meter is a gadget uniquely intended for smart grid that goes about as a portal for family unit gadgets. It gathers the power use subtleties of every gadget at client area and occasionally transmits to MDMS. It additionally goes about as a switch amid data communication that courses the bundles to MDMS through adjacent meters. Alongside data communication, it screens and controls certain activities of end client gadgets.

3.2 Data Concentrator

Data concentrator is likewise named as authority or entryway server and goes about as a middle of the road gadget between the meter and MDMS. It gathers the data from smart meters and transmits or courses the meter data to MDMS.

3.3 Meter Data Management System

It is a head end system which go about as server that is in charge of charging and every one of the activities identified with smart meter data. It gathers and screens all the meter data and sends directions to smart meter and end client gadgets for the nonstop power stream to end client gadgets. It speaks with every one of the areas of the grid and predicts the required power.

3.4 Communication Networks

The working of AMI gadgets relies upon the bidirectional information stream with a control server through the communication networks. The AMI communication organize is progressively masterminded as home territory arrange (HAN), neighborhood region arrange (NAN) and wide zone organize (WAN). Each system utilizes diverse communication advances for effective data transmission. A portion of the striking communication advancements are DASH7 and Zigbee for HAN, WiFi and WiMAX for NAN and GSM, GPRS and 4G communications for WAN [24]. The work topology is utilized as the reasonable communication topology for every one of these networks. The persistent accessibility and rapid data transmission of remote work organize (WMN) made it as a solid communication vehicle for smart meter communication. The design of AMI communication is appeared in Figure 2.

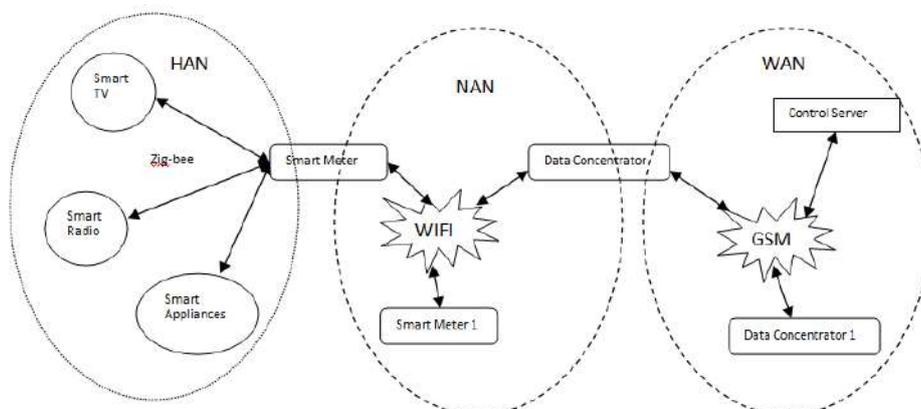


Figure 2 AMI communication network

4. Smart Meter Data Communication

According to the NIST standard [13], smart meter is a gadget with vitality estimating components, communication module and discretionary home region arrange interfaces.

The sub components are interconnected or put independently in the meter case. The vitality estimating components measures and figures the power utilization subtleties, timing of estimation, load data and client demands. The communication module sends the deliberate data to control server with the assistance of meter communication arrange. The persistent accessibility of meter communication with data concentrator is basic for ceaseless data transmission to control server. The server screens the power dispersion dependent on the intermittently gotten estimated data. The test smart meter data are given in Table 1 [11]. It demonstrates that each meter data have the parameters like meter ID, standard/time of use, date/time, control estimation, data type and data gathering. The data are transmitted by the meters for at regular intervals. The communication system ought to have the highlights of defer delicate and misfortune narrow mindedness for productive influence dispersion. The acknowledged time idleness for smart meter communication is in hours [22]. On the off chance that the data isn't come to inside the time, the system is considered as inaccessible and prompts the abstaining of power to the specific living arrangement or zone. A significant number of the specialists recommend remote work arrange as a reasonable procedure for smart meter communication [18] [1].

Table 1: Sample Smart Meter Data

Device id	Standard or Time of Usage	Date & Time	KWh / half hour	Acorn	Grouped
MAC003718	Standard	17/10/2012 13:00:00	0.09	ACORN-A	Affluent
MAC003718	Standard	17/10/2012 13:30:00	0.16	ACORN-A	Affluent
MAC003718	Standard	17/10/2012 14:00:00	0.212	ACORN-A	Affluent
MAC003718	Standard	17/10/2012 14:30:00	0.145	ACORN-A	Affluent
MAC003718	Standard	17/10/2012 15:00:00	0.104	ACORN-A	Affluent

5. Smart Meter Data Security

Security is a noteworthy test in the smart meter data communication. The multifaceted idea of smart meter faces different assaults and the data is should have been secured from the assailants. In this way, the reasonable security mechanisms are required for smart meter data communication. Aside from that, the security mechanisms likewise give protection from equipment issues like system disappointments, client mistakes, and so on for productive power conveyance.

The communication organize and the arrangement of meter at client area present different assaults and increment the likelihood of change of smart meter data. The data is exceedingly touchy and the unveiling or modifying of intensity utilization subtleties causes different issues in smart grid control appropriation. A portion of the explanations behind the necessity of security to smart meter data communication are given beneath,

- The adjustment of smart meter data could make monetary misfortune and harm the whole grid.
- The modified data could prompt the bogus forecast of required vitality.
- Eavesdropping of smart meter data screens the exercises of client and other wrongdoing exercises like robbery, and so forth.
- Attacks like Denial of Service (DoS) on communication organize influence the meter data transmission that in a roundabout way makes aggravation control conveyance.

6. Security Mechanisms

Data security amid communication alludes to the insurance of data from unapproved access, alteration or divulgence of information and keeping the data from defilement. Encryption, confirmation, approval, and so forth are a portion of the procedures pursued for secure transmission of data. Then again, security on a communication arrange is fundamental for accomplishing privacy and honesty of the data amid data transmission. It keeps the unapproved access to the traffic and guarantees the persistent accessibility of the system. This area gives the insights regarding the systems utilized in this examination work for smart grid data security.

6.1 Secure Data Transmission

Encryption is the way toward stowing away or veiling the data into non reasonable format for the motivation behind verifying data from unauthenticated get to. It is generally used to secure the delicate data sent between the gadgets or put away on the gadgets.

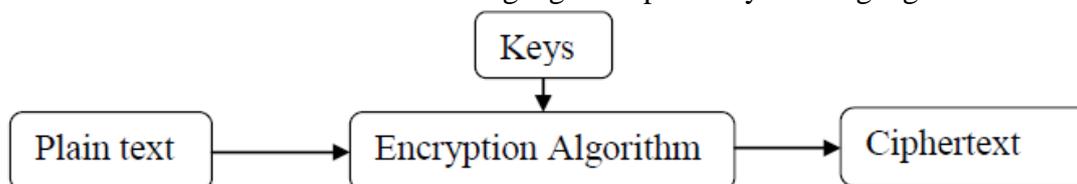


Figure 3: Data Encryption Mechanisms

The means associated with the data encryption process are appeared in Figure 3. The crude data are alluded as plain content, which is changed over into ciphertext by the encryption algorithms and keys. The ciphertext is transmitted to the collector and is decrypted there for knowing the transmitted message. Decoding is the way toward revealing the ciphertext into unique data by the equivalent or diverse keys. A large portion of the accessible algorithms used to scramble data go under either symmetric or hilter kilter algorithms. In symmetric algorithms, a similar key is utilized for encryption and unscrambling process, while in deviated algorithms, separate keys are utilized. Symmetric key algorithms are executed at quick speed [17] and a similar key should be shared securely among sender and collector. In uneven key algorithms, the open key can be shared and the private key is stayed discreet. The generally utilized cryptographic algorithms like advanced encryption standard (AES) [3], data encryption standard [20] go under symmetric key encryption and the algorithms like Rivest-Shamir-Adleman (RSA) algorithm [16], Elliptic bend cryptography [7], and so on has a place with hilter kilter key encryption. After encryption, the data are transmitted to control server through data aggregation technique. Security is a noteworthy test amid the data aggregation of smart meter data communication. Thus, the advanced data aggregation scheme with security mechanisms is required for secure transmission of smart meter data. Symmetric algorithms are utilized to give security in a

large portion of the aggregation procedure than the profoundly mind boggling unbalanced algorithms [15].

7. Secure Data Transmission Scheme For Smart Meter Communication

Smart meters introduced at the customer premises, gather the power utilization data and other information and send them to the control focus. Remote work arrange is prescribed for transmitting the smart meter data to the data concentrator in smart grid [1]. Smart meter data are exceedingly delicate and the examination of data will uncover client's private information. Subsequently, guaranteeing security is particularly fundamental in smart meter communication. Specifically, guaranteeing the data's respectability and privacy is vital. Data aggregation schemes can be acquainted with accomplish the above targets.

7.1 Simulation Results

The AMI communication display used to assess the proposed algorithm is appeared in Figure 3.4. In this figure, a little gathering of 7 meters, accessible ways and the way chosen by the spine hub are considered for the transmission of smart meter data. In this model, Meter 0 is utilized as beginning meter and meter 4 is utilized as authority. The communication between the meters is organized in work arrange style. The simulation is completed utilizing Matlab Simulink in a (PC) having Intel I3 processor with the handling velocity of 2.10 GHz and 4 GB RAM.

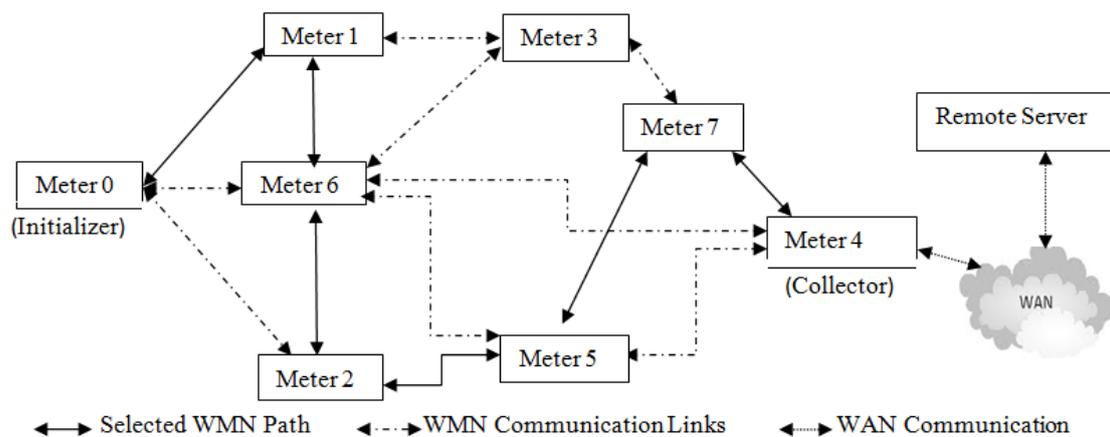


Figure 4: AMI Communication Model

Figure 5 demonstrates the encryption time of the double Euclidean algorithm for different brilliant meter information estimate by utilizing different size keys. The figure demonstrates that the time taken for scrambling the information of size 8, 16, 64, 128 and 160 bits are inside 130. It unmistakably shows that the proposed algorithm encodes the information with the satisfactory dimension of inactivity in information transmission. Figure 4 Decryption time of double Euclidean algorithm for different size information similarly, the unscrambling time of the double Euclidean algorithm is broke down and the outcomes are given in Figure 4. It demonstrates that the decoding time is under 10 milliseconds for different information sizes. Contrasted with encryption time, the decoding of information requires a lot lesser time and would cause negligible inertness on information transmission.

8. Conclusion

In this exploration, the security algorithms are produced for giving data and system security to brilliant meter information correspondence. A tale double Euclidean algorithm

is proposed to encode the brilliant meter information and the bit masking based total plan gives uprightness amid the transmission of meter readings to control server. A proficient key age framework utilizing unique mark layout with Euclidean separation algorithm is created for giving keys to the created security algorithms.

Bolster vector machine is created as a classifier for interruption location framework in shrewd meter correspondence. The dimensionality issue of created IDS is comprehended by common data procedure. A tale half and half component choice technique utilizing Genetic Algorithm and Mutual Information is proposed for expanding the execution of proposed SVM based IDS by choosing the most enlightening highlights. The proposed IDS with highlight choice techniques are assessed by ADFA-LD dataset that demonstrates that the proposed algorithm is reasonable for interruption location in brilliant meter information correspondence. Advancement of SVM based IDS by nearby element choice utilizing different SVM classifiers and GA is additionally proposed. A brilliant meter correspondence connect with work topology is reenacted in NS3 and its execution is assessed. The outcome demonstrates that the nearby component choice based IDS precisely recognizes the assault than other element determination techniques and is appropriate for verifying the correspondence system of shrewd meter.

References

- [1] Deng. X, Peng. Q, He. L and He. T, Interference-aware QOS Routing for Neighborhood Area Network of Smart Grid, IET Communications, 11(5) (2017), 756 – 764.
- [2] Ford. V, Siraj. A and Rahman. M.A., Secure and Efficient Protection of Customer Privacy in Advanced Metering Infrastructure Supporting Fine-grained Data Analysis, Journal of Computer and System Sciences, 83(1) (2017) 84 – 100.
- [3] FIPS PUB 197, Advanced Encryption Standard (AES), National Institute of Standards and Technology, U.S. Department of Commerce, November 2001, 1 – 47.
- [4] Hossain. E, Han. Z and Vincent Poor. H, Smart Grid Communications and Networking, Cambridge University Press, 2012.
- [5] Hur. J, Attribute-Based Secure Data Sharing with Hidden Policies in Smart Grid, IEEE Trans on Parallel and Distributed Systems, 24(11) (2013), 2171 - 2180.
- [6] Kamto. J, Qian. L, Fuller. J and Attia. J, Light-Weight Key Distribution and Management for Advanced Metering Infrastructure, In: IEEE GLOBECOM Workshops, Houston, IEEE Xplore, 2011, 1216 – 1220.
- [7] Koblitz. N, Elliptic Curve Cryptosystems, Mathematics of Computation, 48 (1987), 203 – 209.
- [8] Kulkarni. P, Garmus. S, Fan. Z and Ramos. F, AMI Mesh Networks – A Practical Solution and its Performance Evaluation, IEEE Trans on Smart Grid, 3(3) (2012) 1469 – 1481.
- [9] Kursawe. K, Danezis. G and Kohlweiss. M, Privacy Friendly Aggregation for the Smart-Grid, Lecture Notes in Computer Science, 6794 (2011) 175 – 191.
- [10] Liu. N, Chen. J, Zhu. L and He. Y, A Key Management Scheme For Secure Communications Of Advanced Metering Infrastructure In Smart Grid, IEEE Trans on Industrial Electronics, 60(10) (2013), 4746 – 4756.
- [11] London government sample smart meter data. <https://data.london.gov.uk/dataset/smartmeter-energy-use-data-in-londonhouseholds>

- [12] Metke. A.R and Ekl. R.L, Security Technology for Smart Grid Networks, IEEE Trans on Smart Grid, 1(1) (2010), 99 – 107.
- [13] Michaela. I and Scott. S, Advanced Metering Infrastructure Smart Meter Upgradeability Test Framework, NISTIR 7823, 2015, 1 – 137.
- [14] NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0, NIST Special Publication 1108, 2010, 1 – 121.
- [15] Ozdemir. S and Xiao. Y, Secure Data Aggregation in Wireless Sensor Networks: A Comprehensive Overview, Computer Networks, 53 (2009), 2022 – 2037.
- [16] Rivest. R.L, Shamir. A and Adleman. L, A Method for Obtaining Digital Signatures and Public-key Cryptosystems, ACM Communications, 21(2) (1978), 120 – 126.
- [17] Ritu. T and Sanjay. A, Comparative Study of Symmetric and Asymmetric Cryptographic Techniques, International Journal of Advance Foundation and Research in Computer, 1(6) (2014), 68 – 76.
- [18] Saputro. N and Akkaya. K, Investigation of Smart Meter Data Reporting Strategies for Optimized Performance in Smart Grid AMI Networks, IEEE Internet of Things Journal, 4(4) (2017), 894 – 904.
- [19] Seo. S-H, Ding. X and Bertino. E, Encryption Key Management for Secure Communications in Smart Advanced Metering Infrastructure, In: International Conference on Smart Grid Communications (SmartGridComm), Vancouver, IEEE Xplore, 2013, 498 – 503.
- [20] Sorkin. A, LUCIFER: a cryptographic algorithm, Cryptologia, 8(1) (1984), 22–35.
- [21] The Cybersecurity Coordination Task Group, Smart Grid Cyber Security Strategy and Requirements, NIST Technical Report Draft NISTIR 7628, 2009, 1 – 121.
- [22] The Smart Grid Interoperability Panel Cyber Security Working Group, Introduction to NISTIR 7628 Guidelines for Smart Grid Cyber Security, NIST Technical Report NISTIR 7628, 2010, 1 – 137.
- [23] Thomas. M.S, Ali. I and Gupta. N, A Secure Way of Exchanging the Secret Keys in Advanced Metering Infrastructure, In: International conference on Power System Technology, Auckland, IEEE Xplore, 2012, 1 – 7.
- [24] Usman. A and Shami. H.S, Evolution of Communication Technologies for Smart Grid Applications, Renewable and Sustainable Energy Reviews, 19 (2013), 191 – 199.
- [25] Wan. Z, Wang. G, Yang. Y and Shi. S, SKM: Scalable Key Management for Advanced Metering Infrastructure in Smart Grids, IEEE Trans on Industrial Electronics, 61(12) (2014) 7055 – 7066.
- [26] Xia. J and Wang. Y, Secure Key Distribution for the Smart Grid, IEEE Trans on Smart Grid, 3(3) (2012) 1437 – 1443. Yukun. N, Xiaobin. T, Shi. C, Haifeng. W, Kai. Y and Zhiyong. B, A Security
- [27] Privacy Protection Scheme for Data Collection of Smart Meters based on Homomorphic Encryption, In: EUROCON conference, Zagreb, IEEE Xplore, 2013.

“Analysing Customer Problems While Online Shopping”

Renu*

Abstract

Online shopping is a champion among the most popular ways to deal with make purchases, anyway it's not something that everyone is content with doing. Shopping on the web is winding up increasingly normal reliably, and crosses each kind of thing and every sort of customer. Online customers are all in all ages, start from a wide scope of establishments, and the two individuals. Think about the focal points and shortcomings meticulously so the pro can settle on an informed decision about what's best for customer. In this paper an undertaking is made to realize the things gotten by buyers from online stores and to recognize the sorts of issues looked by purchasers while acquiring stock from electronic shopping. This examination relies upon basic data. The basic data were obtained through gathering plan. The supportive analyzing technique was gotten for social affair data from respondents. In this paper the proposition in like manner given to crush the issues looked by online shopping purchasers.

Keywords: *Online Shopping, Challenges & Customer Buying Behaviour*

Introduction

The present world is mechanized world since it oversees by web. The creating use of web gives a making prospect to E-promoters. Web is changing the technique for customers to buy the items and endeavors and has immediately included into an overall wonder. With the extending usage of web, electronic shopping has ended up being well known among people of different age social occasions. Customers pick web shopping as it is more useful and speedier than disengaged shopping. Electronic shopping is transforming into an especially recognized to purchase a broad assortment of things and organization. Customer's demeanor towards electronic shopping implies their psychological state with respect to making purchases over the web. Electronic acquiring conduct process implies the things got on the web. The methodology of web buying conduct contains more advances and it resembles regular shopping conduct. For instance customer see the prerequisite for getting some thing, they implies the web to buy on the web and start to examine for the information and scan for all of the decisions in conclusion make a purchase which best fits to their necessities. Before making last purchase customers are assaulted by a couple of segments which limits or effect customers for an official decision. The essential theme of the examination is to analyze the issues looked by customers towards web shopping.

In the earlier decade, there has been a shocking change in the manner in which buyers have altered their strategy for shopping. In spite of the way that customers continue acquiring from a physical store, purchasers feel outstandingly supportive to shop online since it frees the customer from explicitly passing by the store. Web shopping has its own inclinations and it decreases the effort of heading off to a physical store. Decisions can be delivered utilizing home calm looking choices and expenses can be easily appeared differently in relation to the contender's things with land at a decision. Web shopping offers the customer

* Assistant professor in commerce, Mata Sundri Khalsa Girls College, Nissing, Karnal

a broad assortment of things and organizations wherein he can consider the expense referred to by different suppliers and pick the best game plan from it. Web displaying is attentively one of a kind in connection to other publicizing channels and web hoists a planned correspondence between the seller and the end customer with nonstop customer advantage. Today, business web advancing is the snappiest creating piece of online exchange. The genuine differentiation among standard and electronic offering is the level of collaboration between the customer and the seller.

Objectives Of The Study

1. To study the concept of online shopping
2. To find out the problems and challenges of customer in online shopping
3. To discuss about the suggestions of these problems

Literature Survey

As indicated by Gaurav Kumar et.al. [20] In the paper titled, "A multi-criteria basic leadership approach for prescribing an item utilizing opinion examination" clarifies that - Nowadays, online stage has turned into a cutting edge methods for shopping among individuals. The surveys of items by clients have been multiplying on the online stage for some time. Since countless are accessible, perpetually clients read audits before purchasing the item. Lion's share of the audits are long and dreary, some of them even have nothing to do with the item itself. Experiencing the audits previously settling on a choice has turned into a repetitive errand. Further, the item determination is an unpredictable basic leadership issue where a few criteria are engaged with the basic leadership process. Analysts have utilized strategies like machine learning and notion characterization to investigate the survey of clients to condense them. In any case, audit outline does not recommend the best/most noticeably bad item. This examination means to suggest the best item in light of the assessments communicated in the clients' surveys. We examine the surveys of clients from different online stages and utilize compelling multi criteria basic leadership way to deal with assess and prescribe the best appropriate item. Ongoing dataset from Flipkart and Amazon are utilized to assess our framework's execution. Diverse contextual investigations have demonstrated that our proposed strategy creates a promising outcome which can help the client in the basic leadership process.

In the paper by SanjeevanSivapalan et.al., [21] titled "Recommender frameworks in web based business", clarifies that - Internet is accelerating and altering the way in which every day undertakings, for example, web based shopping, paying service charges, observing new films, imparting, and so forth., are proficient. For instance, in more seasoned shopping strategies, items were mass created for a solitary market and crowd however that approach is not any more reasonable. Markets in view of long item and improvement cycles can never again survive. To remain focused, markets need to give distinctive items and administrations to various clients with various necessities. The move to web based shopping has made it officeholder on makers and retailers to redo for clients' needs while giving a bigger number of choices than were conceivable previously. This, be that as it may, represents an issue for clients who should now dissect each offering keeping in mind the end goal to figure out what they really require and will profit by. To help clients in this situation, we examine about normal recommender frameworks systems that have been utilized and their related exchange offs.

From Li et.al. [22] "Concentrate on the intelligent connection between client's enthusiastic reaction and the brand trust — in the perspective of web based shopping", clarifies that

Customer's feeling is a marker of consumer loyalty, additionally is the reason for the client's second purchasing. While in web based shopping, issues of brand trust came about because of client feelings are the concentration issue in this field. By utilizing the strategy for examination, it is proposed that online business should give careful consideration to fortify the refinement of the brand esteem, to the brand encounter plan and to enhance client esteem when endeavor to enhance clients' great states of mind.

Problems Of The Customer In Online Shopping

1. Damaging product in transit
2. Delay in delivery of products
3. Receiving wrong product
4. Customer must pay amount before receiving the product

Research Methodology

Region: Delhi NCR area

Age group: 18-40 years

Preferred Population: Educated people

Categories of Respondents

The respondents will be students, corporate employees and government employees, Housewife and Businessmen of Delhi NCR.

Sampling Method: stratified random sampling

Sample size: 1200 respondents.

Data Collection: structure schedule, questionnaire and structured personal interview.

Limitations Of The Study

1. Use some published data and information
2. We can't sure collected data is correct

Results

ANOVA

Which method you prefer for the payment while shopping online?	Between Groups	2.744	1	2.744	1.984	.159
	Within Groups	1732.846	1253	1.383		
	Total	1735.590	1254			
What are the factors that affect your decision to purchase the product online?	Between Groups	.095	1	.095	.028	.868
	Within Groups	4274.707	1253	3.412		
	Total	4274.802	1254			
What are the problems that you face while shopping online?	Between Groups	9.372	1	9.372	2.237	.135
	Within Groups	5249.085	1253	4.189		
	Total	5258.457	1254			
Do you go to the store to see the product before actually purchasing it?	Between Groups	.888	1	.888	1.024	.312
	Within Groups	1085.912	1253	.867		
	Total	1086.800	1254			
Please select your level of satisfaction with online shopping?	Between Groups	.155	1	.155	.052	.819
	Within Groups	3711.901	1253	2.962		

	Total	3712.056	1254			
Do you find any difference in the quality of the product?	Between Groups	2.960	1	2.960	1.816	.178
	Within Groups	2042.279	1253	1.630		
	Total	2045.240	1254			
Are you satisfied with the quality of products bought online?	Between Groups	1.349	1	1.349	1.638	.201
	Within Groups	1031.483	1253	.823		
	Total	1032.832	1254			
Are you satisfied with the after sales service provided by online shopping websites?	Between Groups	.795	1	.795	1.407	.236
	Within Groups	707.941	1253	.565		
	Total	708.736	1254			
Do you think you shop less from traditional markets since the coming of online shopping	Between Groups	.339	1	.339	.474	.491
	Within Groups	896.633	1253	.716		
	Total	896.972	1254			
Will you recommend online shopping to other?	Between Groups	.076	1	.076	.095	.758
	Within Groups	1008.580	1253	.805		
	Total	1008.657	1254			
Do you want online shopping websites to introduce easy EMI payment method on debit cards as well?	Between Groups	1.329	1	1.329	1.638	.201
	Within Groups	1016.771	1253	.811		
	Total	1018.100	1254			
Do you want the online shopping websites sends you the promotional messages?	Between Groups	.912	1	.912	3.766	.053
	Within Groups	303.458	1253	.242		
	Total	304.370	1254			

Suggestions

1. Online companies should reduced the period of the product delivery within two three days.
2. Company should be build buyer trust with customer product review
3. Company should be provide popular payment option to their customer
4. Company can adopt privacy policy for overcome the problems to their customers
5. Online websites must sure about the quality of the product
6. Company should provide the right information to their customer

Conclusion & Findings

Coming up next square measure the recommendations supported the discoveries of the investigation:

1. Most of the purchaser's square measure confronted the difficulty of conveyance of injured item through on-line searching. thus net on-line searching organizations ought to a lot of concerns regarding the conveyance of right item to the purchasers.

2. The purchasers feel that conveyance of the item is multi week and over multi week. Therefore the on-line organization needs to decrease the time of the item conveyance within 2-3 days.

3. Customers need to be created aware regarding the shifted deals advancement plans that build this on-line shopping for progressively appealing and documented among the purchasers.

4. Applicable heedfulness should be created accessible to all or any individuals of assorted occupation.

5. On-line sites should guarantee regarding the standard and right of the info to their customers.

6. Since exchange is on-line the purchasers should be secured of net security and classified card information.

7. The web searching can be created effective simply by creating the conveyance of unscathed merchandise and applicable conveyance time.

This examination has incontestable enthusiasm for exploring client mentality towards on-line searching. on-line searching prominence is increasing among adolescents, in spite of the actual fact that it's equally documented among alternative age bunches on-line searching but there's still a part of extent of progress here that ought to be finished. The investigation has uncovered that the overwhelming majority of the purchasers have positive frame of mind towards on-line searching and what is more dominant a part of the purchasers endure owing to pointless postponement. in order that they ought to pay attention to boost their condition to remain far from postponement.

References

1. "1995: eBay launched under the name AuctionWeb - Photos: 20 years of websites - the defining moments of the web".
2. "About Amazon - Our Innovations - AmazonFresh". Retrieved on 2016-11-24 from www.amazon.com.
3. "About Us | Skrill". Retrieved on 2016-11-24 from www.skrill.com..&"Skrill (Moneybookers) | CrunchBase". Retrieved on 2016-11-24 from www.crunchbase.com.
4. "Alexa - Top Sites by Category: Games". Retrieved on 2016-11-24 from www.alexa.com.
5. "AlibabaGroup". Retrieved on 2016-11-24 from www.alibabagroup.com.
6. "Bossgoo.com". LinkedIn. Retrieved on 2016-11-24 from <https://www.linkedin.com/company/bossgoo>.
7. "Celebrating PayPal's centenary". Retrieved on 2016-11-24 from <https://www.finextra.com/resources/feature.aspx?featureid=890>.
8. "Coming soon: Buyable Pins!". 2015-06-02. Retrieved on 2016-11-24 from <https://business.pinterest.com/en/blog/coming-soon-buyable-pins>.
9. "CompuServe expands electronic mall - Columbus - Columbus Business First". Columbus Business First. Retrieved on 2016-11-24 from <https://www.bizjournals.com/columbus/stories/1997/03/10/daily12.html>.
10. "Costco Wholesale Corporation Launches B2B E-commerce Site for Faster and Easier Business Shopping. - Free Online Library". Retrieved on 2016-11-24 from www.thefreelibrary.com.
11. "eBay To Acquire Online Tickets Marketplace StubHub - eBay Inc.". Retrieved on 2016-11-24 from <https://investors.ebayinc.com/releasedetail.cfm?releaseid=225333>.

12. "eBay to Acquire PayPal - eBay Inc.". Retrieved on 2016-11-24 from investors.ebayinc.com.
13. "Exclusive: Indiamart's Agarwal backs office products portal ProcMart". www.vccircle.com. Retrieved on 2016-11-24 from <https://www.vccircle.com/exclusive-indiamarts-agarwal-backs-officeproducts-portal-instaproc/>.
14. "Exclusive: Indiamart's Agarwal backs office products portal ProcMart". www.vccircle.com. Retrieved on 2016-11-24 from <https://www.vccircle.com/exclusive-indiamarts-agarwal-backs-officeproducts-portal-instaproc/>.
15. "Flipkart.com". Retrieved on 2016-11-24 from www.flipkart.com.
16. "GOG.com". LinkedIn. Retrieved on 2016-11-24 from <https://in.linkedin.com/company/gog>.
17. "Google AdWords | Google (PPC) Pay-Per-Click Online Advertising". Retrieved on 2016-11-24 from www.google.com.
18. "Google Expands Advertising Monetization Program for Websites – News announcements – News from Google – Google". Retrieved on 2016-11-24 from googlepress.blogspot.com.
18. "Google Launches Self-Service Advertising Program – News announcements – News from Google – Google". Retrieved on 2016-11-24 from googlepress.blogspot.com.
19. "Google Wallet". Mashable. Retrieved on 2016-11-24 from <http://mashable.com/2014/07/14/google-wallet-for-beginners/#wOGm4qI37Gqp>
20. Gaurav Kumar, "A multi-criteria decision making approach for recommending a product using sentiment analysis", 12th International Conference on Research Challenges in Information Science (RCIS), IEEE, 2018.
21. Sanjeevan Sivapalan, Alireza Sadeghian, Hossein Rahnama and Asad M. Madni, "Recommender systems in e-commerce", World Automation Congress (WAC), 2014.
22. Li Li, "Study on the interactive relationship between customer's emotional response and the brand trust — In the view of online shopping", Proceedings of 2013 IEEE International Conference on Service Operations and Logistics, and Informatics, July 2013.

An Empirical Investigation Of Qualitative Factors That Stimulates For Mobile Banking Adoption Among Rural Bank Customer: Case Of Satara District

Dr. Santosh Parakh*

Dr. Kavita Suryawanshi**

Abstract

This study provides a rural perspective to the global research and literature on rural customer adoption of Mobile banking. It empirically examines the most influencing qualitative factors that always stimulates mobile banking user for service adoption. A sample of 300 customers was surveyed from the rural areas of Satara district. Chi-square testing was used in stated hypothesis. Also influence of qualitative factors were identified by Factor Analysis. The study therefore concludes that Security-Privacy, Trust and Familiarity has significant impact on Mobile banking adoption. And qualitative factors such as Prestige, Speed, Trust, Safety & Security, Easiness and Familiarity has major influence on customer for the adoption of Mobile banking.

Keywords – Mobile banking, Qualitative influencing factors, rural customer.

1. Introduction

Demographic characteristics such as age, gender, marital status, employment status, income level, and locality have been found to influence the behaviors of Mobile banking (MB) customers in Asia. There has been a significant development in the financial and banking institutions over the last 20 years because of the improvement information communication technology. Rapid growth in the technology advancements in the area of telecommunications and information technology have continued to revolutionize the banking industry. The delivery of financial and banking services has experienced key changes during the past few years. A feature of the banking industry across the globe has been that it is increasingly becoming turbulent and competitive. Provision of mobile banking services has been broadly used, and an understanding of the customer adoption process will have important implications for bankers and customers alike. Most of the studies found an importance of a rural customer. It can be assumed that rural customer is a backbone of an Indian economy. Now it is very important to shift more focus on understanding perception of rural customer on every segment of a business. This study aims to identify qualitative factors which stimulates a rural bank customer for the adoption of Mobile banking service.

2. Scope Of The Study

Researcher was intended to examine consumer's perception towards mobile banking adoption in rural areas of Satara district. Researcher has surveyed mobile banking customers of private, nationalized and co-operative banks in rural areas of Satara district.

* Head of Masters in Computer Application Department, VIIT, Baramati, Dist. Pune, Maharashtra, India

**Associate Professor, Dr. D. Y. Patil Institute of MCA & Management, Akurdi, Pune, India

Satara district contains ten talukas such as Karad, Phaltan, Wai, Khandala, Patan, Khatav, Koregaon, Man, Wai, Khandala, Jaoli and Mahabaleshwar. This study examines the problems of Mobile banking customers, consumer's opinion towards adoption of Mobile banking and identifying the important factors affecting on adoption of Mobile Banking.

3. Selection Of The Area

The researcher used the simple random sampling method for the selection of sampling area. A simple random sampling is a type of probability sampling method. Researcher has long practiced various forms of random selection. Here the researcher selected Karad, Phaltan, Wai and Mahabaleshwar as rural areas of Satara district for this study purpose.

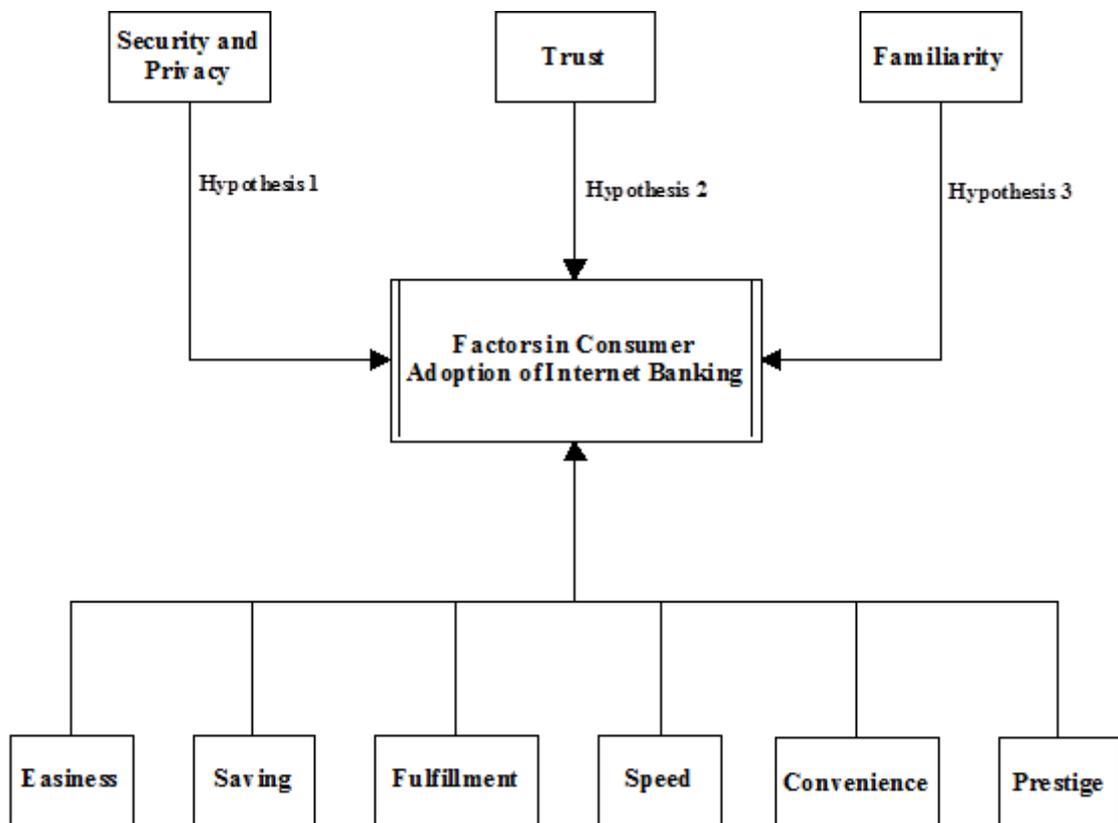
4. Selection Of The Samples

In this research probability sampling method was used for the selection of area and non-probability sampling method was used for the selection of sample respondents from selected sample area i.e. rural areas of Satara district. For this study researcher has used a convenience sampling method to select samples. Total users of mobile banking is not known to anyone so, researcher has selected **300 sample respondents**.

5. Research Model

Figure 3.1, illustrates the model used in this study. In this instrument researcher hypothesized three factors (i.e. Security and Privacy, Trust and Familiarity). Other factors such as Easiness, Saving, Fulfillment, Speed, Convenience, Prestige also considered for this study.

Fig 5.1: Research Model

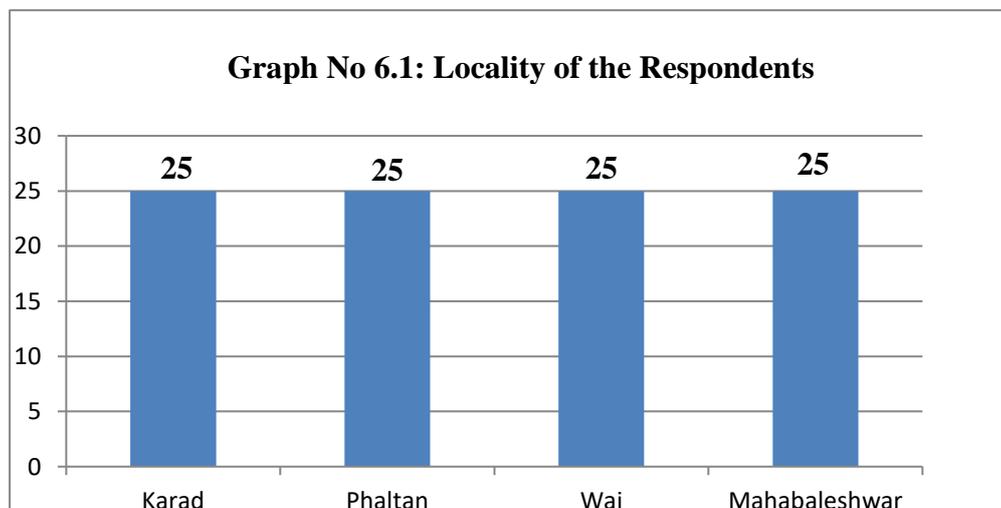


6. Data Analysis And Discussion

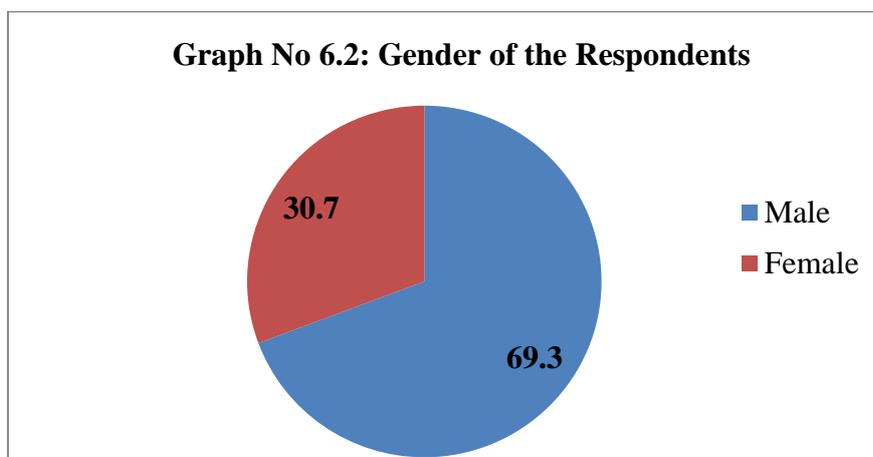
6.1 Locality and gender of the respondents

Locality and gender are the important indicators and characteristics of the respondents. Table 6.1 indicates that there were 300 respondents were chosen for the study and there were 75(25%) respondents from Karad taluka, 75(25%) respondents from Phaltan taluka, and 75(25%) respondents from Wai taluka, 75(25%) respondents from Mahabaleshwar taluka; Equal respondents were selected from rural areas of Satara district. Distribution of the gender shown in Table 6.2. Most of mobile banking users 69% were male respondents and only 31% users were female. It indicates that most of the female bank customers are not using mobile banking services.

Locality	Freq.	%
Karad	75	25
Phaltan	75	25
Wai	75	25
Mahabaleshwar	75	25
Total	300	100



Gender	Freq.	%
Male	208	69.3
Female	92	31.7
Total	300	100



6.2 Determinants Of Mobile Banking Adoption And Purposes Of Using Mobile Banking

In the mobile banking literature many researchers have discussed about adoption of mobile banking services in different type of the customers and various demographic characteristics. Here researcher has addressed this issue based on their intentions of background of the respondents and their adoption of mobile banking service. Table from 6.3 indicates overall score and location wise score of the respondents given based on 5 point Likert Scale (1=Strongly Disagree to 5=Strongly Agree) higher value indicates their agreement and lower value that indicate disagreement while value 3 or about 3 indicates neutral response about the particular indicator.

For understanding the overall responses regarding Determinants of Adoption of Mobile Banking and purposes of using it, researcher has extracted mean value of the responses and data shows that (Table 6.3). Familiarity dimensions was ranging from 4.33 to 4.51, Security -Privacy dimension ranging from 4.16 to 4.34, dimensions trust was ranging from 4.24 to 4.49, dimension easiness was ranging from 3.56 to 3.96, dimensions speed was ranging from 3.76 to 4.59, dimensions prestige was 3.47 to 4.24.

Overall results of mean analysis indicates that most of constructs and dimensions are ranging more than 3 hence we primarily say that all the dimensions have plays significant role in the adoption of mobile banking among the respondents from Karad, Phaltan, Wai and Mahabaleshwar.

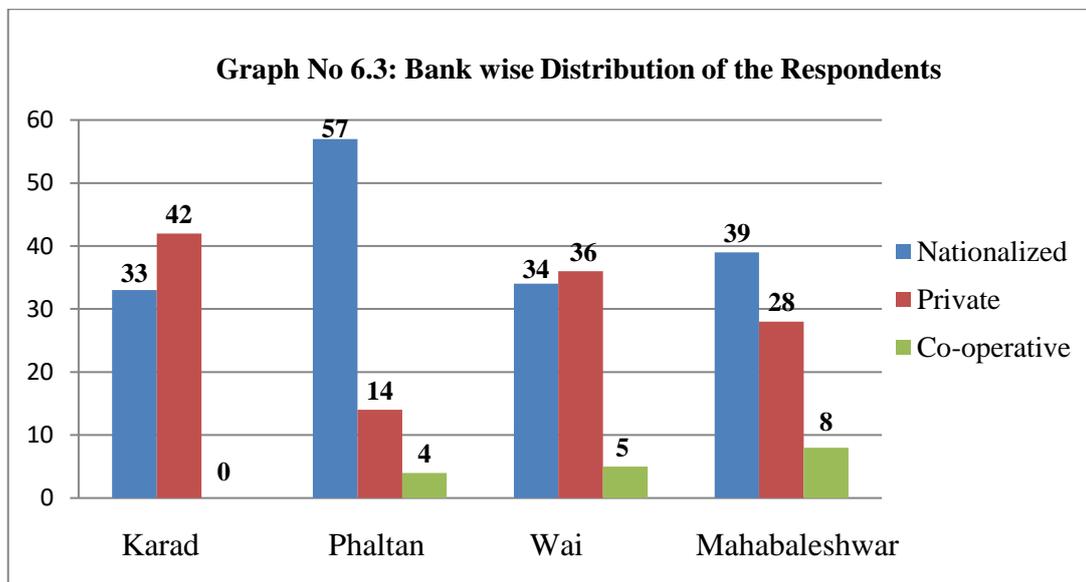
Table No 6.3 : Determinants of Adoption of Mobile Banking and Purposes					
Sr. No	Dimensions	Constructs	Mean	N	Std. Dev.
1	Familiarity	I am able to use Mobile	4.33	300	0.410
		I am able to use mobile very easily.	4.39	300	0.616
		I have good experience about mobile.	4.43	300	0.728
		I know about mobile based transaction.	4.46	300	0.223
		Website of my bank is very user friendly to carry transaction over mobile.	4.51	300	0.429
2	Security &	Mobile banking is safe	4.32	300	0.697

Table No 6.3 : Determinants of Adoption of Mobile Banking and Purposes					
Sr. No	Dimensions	Constructs	Mean	N	Std. Dev.
	Privacy	Bank keeps ID & Password safe & secure	4.23	300	0.813
		Fund Transfer through Mobile Banking is safe & secure.	4.34	300	0.321
		Bank keeps my all personal and transaction details very safe and secure.	4.16	300	0.481
3	Trust	I trust on Mobile based transaction	4.24	300	0.609
		I trust on Mobile banking system	4.43	300	0.567
		I trust on security features provided in Mobile Banking	4.39	300	0.356
		I trust on my bank.	4.49	300	0.519
4	Easiness	Mobile banking web-navigation is simple	3.56	300	0.737
		Functioning of Mobile Banking is easy to understand	3.63	300	0.845
		All transaction of Mobile Banking are easy to perform	3.96	300	0.816
5	Speed	Mobile Banking service is faster than traditional banking system.	4.59	300	0.719
		Mobile banking pages loading speedily	3.76	300	0.757
		All applications of Mobile Banking loads faster	3.85	300	0.869
6	Prestige	It gives me lots of respect in the society.	3.71	300	0.864
		It helps me to maintain my status symbol.	3.47	300	1.15
		It is very much necessary for my living standard.	4.24	300	0.887
		Everyone in my friend circle uses Mobile Banking service.	4.11	300	0.922

6.3 Bank wise distribution of the respondents

A statistics of bank wise distribution of the respondents is essential to know more about the mobile banking users because this data clear the bank type wise distribution of the respondents chosen for the study. The study was not concentrated with any particular bank. Table 4.3 posited that there were more customers are nationalized bank (54.33%) followed by private sector banks (40%) followed by co-operative banks (5.67%). Table 4.3 illustrates banks wise responses received from sample area.

Table No: 6.4: Distribution of Respondents (Region Wise)				
	Type of Bank			Total
	Nationalized	Private	Co-operative	
Karad	33	42	0	75
Phaltan	57	14	4	75
Wai	34	36	5	75
Mahabaleshwar	39	28	8	75
Total	163	120	17	300
%	54.33	40	5.67	100



6.4 Factor Analysis (Principal Component Analysis)

Researcher has used factor analysis (principle component analysis) method to identify the major factors affecting on adoption of mobile banking. Before, conducting factor analysis, Researcher performed the Kaiser-Meyer-Olkin (K-M-O) and Bartlett's Sphericity test to understand adequacy of the data for factor analysis. High values of the Kaiser-Meyer-Olkin measure (close to 1.0) generally indicate that a factor analysis may be useful with data. If the value is less than 0.50, the results of the factor analysis probably won't be very useful. Bartlett's test of Sphericity tests the null hypothesis that correlation matrix is an identify matrix, which would indicate that variables are unrelated and therefore, unsuitable for structure detection. Small values (less than 0.05) of the significance level indicate that R-Matrix is not an identify matrix and a factor analysis may be useful with data. Table 6.5 indicates that, in the present test the Kaiser-Meyer-Olkin (KMO) measure was 0.620. Bartlett's Sphericity test also found highly significant; Chi-square= 2576.355, df = 511 with a significant of 0.000 it indicates that this data support for factor analysis and indicates that, factor analysis will appropriate with this data.

Table No 6.5 : KMO and Bartlett's Test		
Kaiser- Meyer- Olkin Measure of Sampling Adequacy.		0.620
Bartlett's Test of Sphericity	Approx. Chi-Square	2576.355
	Df	511
	Sig.	0.000

Initial communalities (Table 6.6) labelled as Initial are before extraction communalities and labelled as extraction are after extraction communalities. The all communalities were high (above 0.325), which indicates that the extracted components represent the variables well.

Table No 6.6: Communalities		
	Initial	Extraction
I am able to use Mobile.	1.000	0.614
I am able to use mobile very easily.	1.000	0.578
I have good experience about mobile.	1.000	0.558
I know about mobile based transaction.	1.000	0.541
Website of my bank is very user friendly to carry transaction over mobile.	1.000	0.325
Mobile banking is safe	1.000	0.515
Bank keeps ID & Password safe & secure	1.000	0.494
Fund Transfer through Mobile Banking is safe & secure	1.000	0.478
Bank keeps my all personal and transaction details very safe and secure.	1.000	0.475
I trust on Mobile based transaction	1.000	0.454
I trust on Mobile banking system	1.000	0.429
I trust on security features provided in Mobile Banking	1.000	0.437
I trust on my bank.	1.000	0.873
Mobile banking web-navigation is simple	1.000	0.421
Functioning of Mobile Banking is easy to understand	1.000	0.883
All transaction of Mobile Banking are easy to perform	1.000	0.744
Mobile Banking service is faster than traditional banking system.	1.000	0.493
Mobile banking pages loading speedily	1.000	0.750
All applications of Mobile Banking loads faster	1.000	0.489
It gives me lots of respect in the society.	1.000	0.456
It helps me to maintain my status symbol.	1.000	0.647
It is very much necessary for my living standard.	1.000	0.619
Everyone in my friend circle uses Mobile Banking service.	1.000	0.759
Extraction Method: Principal Component Analysis.		

Table No 6.7: Total Variance Explained

	Initial Eigen Values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.115	11.205	11.175	4.125	11.125	11.235	2.468	7.642	7.456
2	2.351	8.134	19.585	2.751	8.123	19.856	2.218	6.698	14.677
3	2.356	6.212	25.458	2.676	6.630	25.768	2.224	6.464	21.568
4	1.944	5.389	31.341	1.834	5.385	31.632	2.135	5.883	25.396
5	1.735	5.012	36.789	1.745	5.054	36.734	1.897	5.656	31.267
6	1.665	4.478	40.521	1.654	4.466	40.549	1.886	5.015	36.683
7	1.578	3.849	43.428	1.877	3.478	43.832	1.679	4.865	41.282
8	1.448	3.785	48.815	1.542	3.545	48.983	1.561	4.532	46.541
9	1.276	3.574	51.434	1.315	3.614	51.547	1.432	4.518	49.856
10	1.165	3.481	54.292	1.238	3.481	54.531	1.376	3.958	53.560
11	1.107	3.395	57.658	1.086	3.357	57.654	1.252	3.762	57.461
12	1.001	2.757	67.58						
13	0.987	2.456	74.65						
14	0.917	2.278	79.63						
15	0.889	2.067	81.36						
16	0.843	1.978	85.54						
17	0.786	1.755	87.69						
18	0.722	1.648	88.69						
19	0.657	1.589	90.65						
20	0.566	1.377	93.41						
21	0.432	1.166	97.76						
22	0.339	0.856	98.82						
23	0.269	0.781	100.0						

A table 6.7 reveals that, the eigen values associated with each linear component before extraction and after extraction. The eigenvalue for a given factor measure the variance in all the variables which is accounted for by that respect to the variables. If a factor has a low

eigenvalue, then it is contributing little to the explanation of variances in the variables and may be ignored as redundant with more important factors. The eigenvalue associated with each factor represent the variance explained by the particular linear component. First part of the table labelled as 'Initial Eigenvalues' indicates that;

- 1st Factor accounting 7.78% of variance in this model.
- 2nd Factor accounting 7.26% of variance in this model.
- 3rd Factor accounting 6.82% of variance in this model.
- 4th Factor accounting 6.54% of variance in this model.
- 5th Factor accounting 5.89% of variance in this model.
- 6th Factor accounting 5.29% of variance in this model.

Table 6.8 indicates item wise loading of the construct and it's important in the present model. The table indicating that there is total communicative impact of 6 factors was 39.5% and first factor presenting impact of 7.78% however 6th factor presenting 5.29% of impact in the model.

Table No 6.8: Rotated Component Matrix		
It gives me lots of respect in the society.	0.877	1.Prestige (7.78%)
It helps me to maintain my status symbol.	0.760	
It is very much necessary for my living standard.	0.745	
Everyone in my friend circle uses Mobile Banking service.	0.754	
Mobile Banking service is faster than traditional banking system.	0.667	2. Speed (7.26%)
Mobile banking pages loading speedily	0.579	
All applications of Mobile Banking loads faster	0.693	
I trust on Mobile based transaction	0.888	3. Trust (6.82%)
I trust on Mobile banking system	0.720	
I trust on security features provided in Mobile Banking	0.644	
I trust on my bank.	0.610	
Mobile banking is safe	0.778	4. Safety and Security (6.54%)
Bank keeps ID & Password safe & secure	0.690	
Fund Transfer through Mobile Banking is safe & secure	0.794	
Bank keeps my all personal and transaction details very safe and secure.	0.486	
Mobile banking web-navigation is simple	0.768	5.Easiness (5.89%)
Functioning of Mobile Banking is easy to understand	0.710	
All transaction of Mobile Banking are easy to perform	0.826	
I am able to use Mobile.	0.723	6.Familiarity (5.29%)
I am able to use mobile very easily.	0.625	
I have good experience about mobile.	0.611	
I know about mobile based transaction.	0.499	
Website of my bank is very user friendly to carry transaction over mobile.	0.727	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations.		

7. Findings

1. It is found that Male was 69% whereas Female Mobile banking users was only 31%. 54.33% Mobile banking users are from Nationalized banks whereas 40% from Private bank and only 5.67% from Co-operative banks.
2. The overall responses regarding Determinants of Adoption of Mobile Banking and purposes of using it, researcher has extracted mean value of the responses and data shows that (Table 6.3).
3. Familiarity dimensions was ranging from 4.33 to 4.51, Security -Privacy dimension ranging from 4.16 to 4.34, dimensions trust was ranging from 4.24 to 4.49, dimension easiness was ranging from 3.56 to 3.96, dimensions speed was ranging from 3.76 to 4.59, dimensions prestige was 3.47 to 4.24.
4. Results of the factor analysis indicates that Familiarity, Security-Privacy, Trust, Easiness, Speed and Prestige are not having equal importance in the adoption of mobile banking services among the customers. Actually factor analysis has given 6 groups of factors i.e. 1. Prestige (7.78%), 2. Speed (7.26%), 3. Trust (6.82%), 4. Safety and Security (6.54%), 5. Easiness (5.89%), 6. Familiarity (5.29%).

8. References

- [1]. Anitha. K, Saranya. J, Dr. S.Vasantha (2013), "An Exploratory Study on Usage of Technology, in Banking Sector" Vol. 2, Issue 11, pp.6487-6494
- [2]. Padashetty and Kishore SV(2013), "An Empirical Study On Consumer Adoption of Mobile Payments In Bangalore City –A Case Study" Vol.–IV, Issue–1(1), pp. 83-94
- [3]. Parakh (2014), An Empirical study of consumer's perspective on internet banking adoption with reference to western Maharashtra. A Thesis submitted to Solapur University, Solapur for the Degree of Philosophy in Commerce & Management under the faculty of Commerce. August 2014.
- [4]. Sharma (2011), "Issues & Challenges in Mobile Banking In India: A Customers' Perspective" Vol. 2, No. 2, pp. 350-369
- [5]. Sharma (2011): Mobile Banking As Technology Adoption And Challenges" Vo. 1, Issue. 6, pp. 147-157.
- [6]. <http://www.ebscohost.com>
- [7]. <http://www.rbi.org.in>
- [8]. <http://www.springer.com>
- [9]. <http://www.onlinesbi.com>

Indian Farmers: Their Economic Outlook

Priti*

Abstract

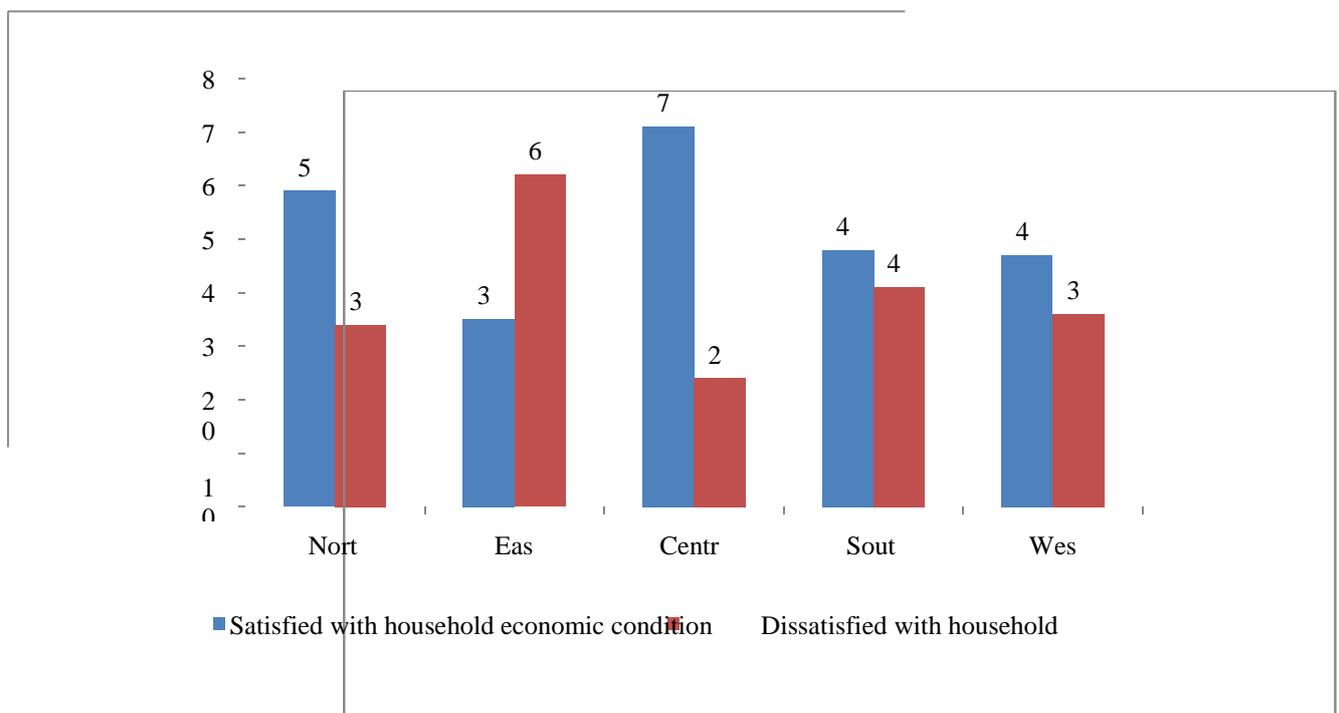
The conditions of farmers in India seem to be very unpleasant and therefore farmers do not want their children to continue farming. Low income and productivity, irregular weather cycles, and low levels of support from the government seem to be the most important reasons among farmers for such dissatisfaction. We asked farmers about their present economic condition. Around 50 per cent of the farmers are satisfied and 40 per cent were dissatisfied with their present economic condition.

Keywords: farmer, economic, unpleasant, weather, productivity, conditions.

Introduction

The regional pattern suggests that farmers from Central India are more satisfied while their counterparts in Eastern India seem to be most dissatisfied with their present economic condition (Figure 4.1). Not surprisingly, landless farmers are least satisfied with their present economic condition and the large farmers are comparatively more satisfied with their present economic condition.

Figure 4.1: Farmers' Satisfaction with Their Present Economic Condition (per cent)



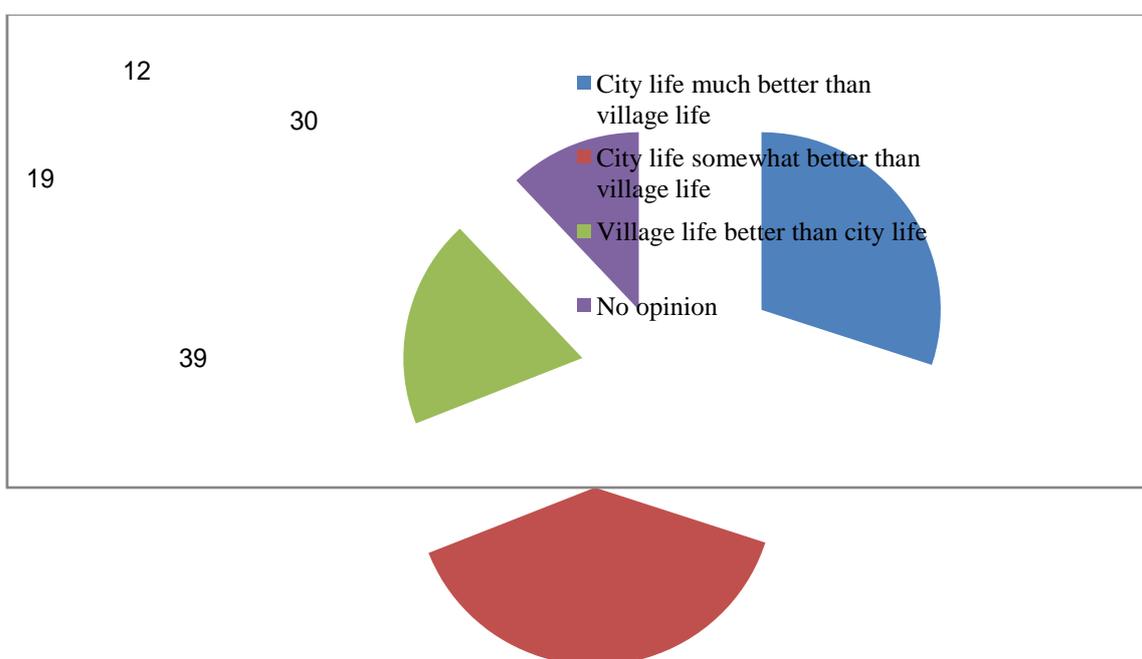
Farmers were also asked to compare their present economic condition with their condition five years ago. 40 per cent said that compared to past five years their present economic

* UGC NET (Geography)

condition has improved, 37 per cent said no change, and 15 per cent said that their condition has worsened in comparison to past five years. Nevertheless, farmers are optimist about their future economic condition. Approximately half of the respondents (42 per cent) feel their economic condition will improve, 19 per cent said it is likely to remain the same, and 10 per cent feel their economic condition will become worse in next five years. In both past and future economic condition questions, large farmers are doing very well in comparison to landless and small farmers.

The dissatisfaction with economic condition lies at the heart of why majority of farmers (69 per cent) think that city life is much better than village life. Very few farmers (19 per cent) were of the opinion that village life was better than city life (Figure 4.2).

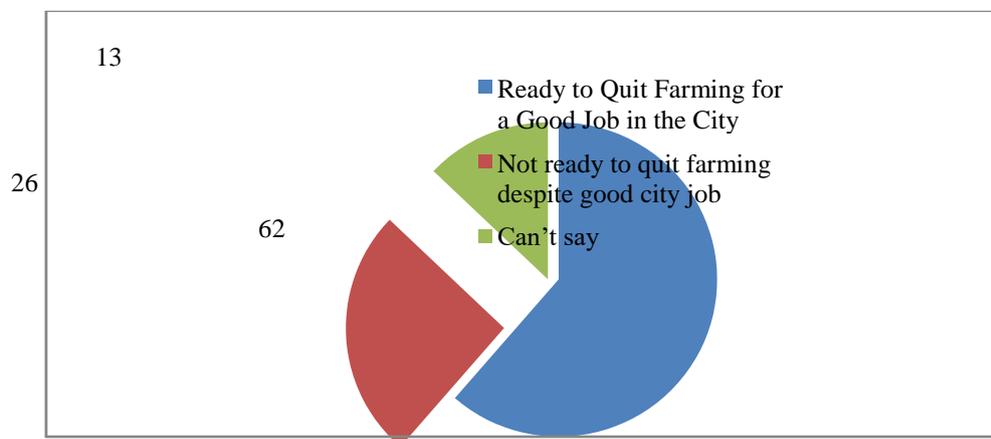
Figure 4.2: Most farmers think that City Life is Better than Village Life (per cent)



The study reveals that farmers who have no land (landless farmers) show a much stronger preference for city life over village life (Figure 4.3). One possible explanation could be that there are more employment opportunities in cities in comparison to villages.

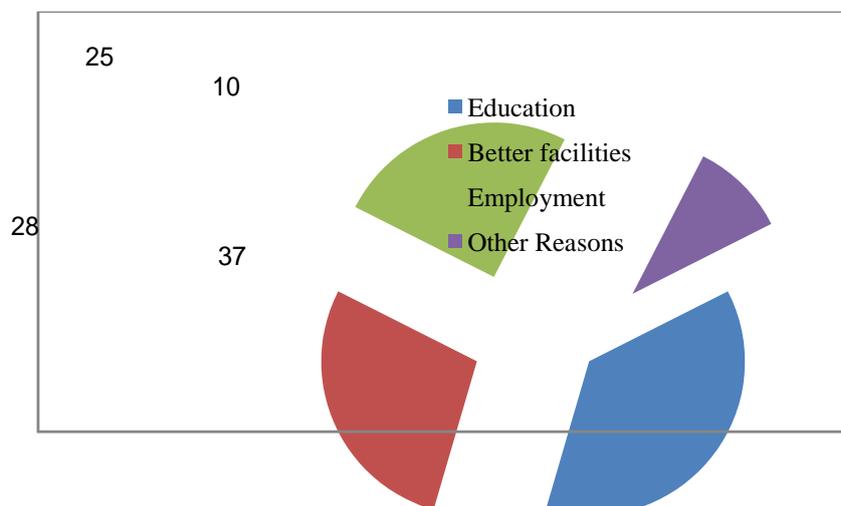
On being asked whether they would leave farming if they get an employment opportunity in the city, 61 per cent of the farmers answered in the affirmative and 26 per cent said they would not. Half the farmers who said they are ready to quit farming if given an employment opportunity in the city said that they would do so only if the city job was a good one (Figure 4.4). Farmers who have no land or a small piece of land are more open to the idea of quitting farming and migrating to cities for jobs that give a higher income. On the other hand, large farmers (those with big landholdings) are much less willing to quit farming for a city job.

Figure 4.4: Would You Quit Farming if You Get Employed in the City?



The study reveals that most farmers do not see a future for their children in farming and would like to see them settle in the city. When farmers were asked whether they want their children to settle in the city, as many as 60 per cent said they want their children to settle in the city. Another 14 per cent do not want their children to settle in the city, whereas 19 per cent said they will prefer their children's choice on this matter. Better education was cited as one of the most important reason of why farmers want their children to settle in cities, followed by better facilities, and employment opportunities (Figure 4.5).

Figure 4.5: Why do farmers want their children to settle in the city?



Note: All figures are in percentage; only among those who said that they want their children to settle in the city. Question asked: What is the main reason for which you would want your children to settle in the city?

Most farmers consider farming as their ancestral occupation and they like farming as an occupation. However, when asked whether they would like to see their children engaging in farming, only 18 per cent responded positively. 36 per cent said they do not want their children to continue farming as their occupation and 37 per cent said they will prefer their children's choice and go with their decision while choosing their profession.

Why are farmers disillusioned with farming? Why do they not want their children to continue farming? We found various responses from farmers and most of them said they want their children to do some better job other than farming. Farmers believe that farming is not a profitable profession and earning is not enough so their children should opt out from farming. There is no future in farming that is why their children should quit farming. We also find that those who do not want their children to continue farming are more likely to say that their children should settle down in cities. The sentiment that their children should not continue farming is strongest among landless and small farmers (39 per cent) and weakest among large farmers (28 per cent).

Not only do most farmers want their children to quit farming and do some other jobs, young members of a farmer household also seem to be less interested in doing farming. In the survey we also interviewed a young person from a farmer household to know their opinion on farming and most of them (60 per cent) said that they would prefer to do some other jobs, whereas only 20 per cent said they would continue farming. Table 4.1 lists out the reasons why these young members are not interested in farming.

Table 4.1: Why do the Young not want to pursue farming?

	Per cent
Interested in other job or work	36
Earning is not good	22
I am highly educated so this work is not for me	8
Risky/mental tension	7
Agriculture is a ruined area	5
Others	6

We also interviewed one female respondent from every sampled household. A majority of these female respondents (67 per cent) feel that agricultural income is not sufficient to meet their household expenditure. Only 20 per cent feel that agricultural income is sufficient. Similarly, 43 per cent female respondents feel that their quality of life would better if their family members had been in a profession other than farming.

Economic Hardships

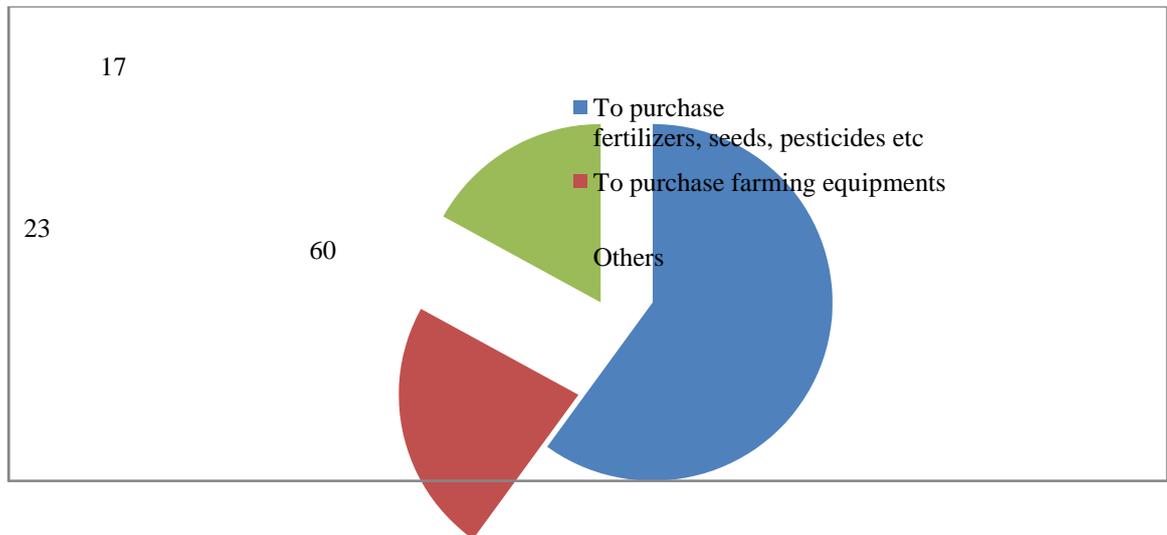
In the study, only 5 per cent respondents said that in last five years they had to sell their land. Poor financial condition (27 per cent) seems to be the most important reason followed by money required for a marriage in the family. Some farmers also had to sell their land due to the pressure of land acquisition (Table 4.2).

Table 4.2: Reasons for selling the land

	Per cent
Poor financial condition	27
Money required for family marriage	15
Pressure of land acquisition	9
For business/education of son/daughter	9
Had to return money to the money Lender	7
Got a Good Deal	7
For medical expenditure/Treatment	6
Property was disputed and there was pressure to sell	4
Other Reasons	16

Likewise, only two out of ten farmers said that in last five years they had take loan for farming related activity. The loans were primarily taken for purchasing fertilizers, seeds, pesticides etc. or buying farming equipments like tractor, thrasher etc. (Figure 4.6).

Figure 4.6: Why do Farmers Take a Loan? (per cent)



References

- Gajalakshmi, V. and R. Peto (2007) Suicide rates in rural Tamil Nadu, South India: Verbal autopsy of 39 000 deaths in 1997–98, *International Journal of Epidemiology*, Vol. 36, No.1, pp. 203-207.
- Government of India (2007) Report of the Expert Group on Agricultural Indebtedness, Ministry of Finance (Chairperson: R. Radhakrishna).
- Jodha, N. (1978) Effectiveness of Farmers' Adjustment to Risk, *Economic and Political Weekly*, Vol. 13, No. 25, pp. A38-A48.
- Joseph, A, S. Abraham, J. Muliylil, K. George, J. Prasad, S. Minz, V. J. Abraham and K. S. Jacob (2003) Evaluation of Suicide Rates in Rural India, *British Medical Journal*, Vol. 326, pp.1121-1122.
- Manuamoron, O. P. (2007) Scaling up Microinsurance: The Case of Weather Insurance for Smallholders in India, *Agriculture and Rural Development Discussion Paper 36*, The World Bank.
- Mishra, S. (2006a) Suicide of Farmers in Maharashtra, *Indira Gandhi Institute of Development Research, Mumbai*.
- Mishra, S. (2006b) Farmers' Suicides in Maharashtra, *Economic and Political Weekly*, Vol. 41, No. 16, pp. 1538-1545.
- Mishra, S. (2006c) Suicide Mortality Rates across States of India, 1975-2001: A Statistical Note, *Economic and Political Weekly*, Vol. 41, No. 16, pp. 1566-1569.
- Mishra, S. (2007a) Agrarian Scenario in Post-reform India: A Story of Distress, Despair and Death, WP-2007-001, *Indira Gandhi Institute of Development Research, Mumbai*.

Role of social media in the current scenario: An Indian context

Prashant Singh*

Abstract

Every centenary is recognized for its something or something. The 21st century is believed to be the centenary of the 'internet and web media' era. It is well known and has become the main theme of the debate that till the end of the twentieth century strong media mediums in the world have expanded at a rapid pace. The result of this extension is the power of the media has come in the hands of the general public. Looking at the changing dimensions of the media, it seems that time is about time for change. There have been new ways of communicating and new mediums which have completely become part of our lives. Social media linking people and various places is such a medium that we have adopted as an inseparable part of life. It is deciding many aspects of our life. Like our lifestyle, work, fun and even sadness. We express these emotions immediately. Looking at its usefulness in the current context, it can be said that a great need and reality of this era has become social media. The media is called the fourth pillar of democracy. The importance of media can be judged by this. In the society, the role of the media is to communicate. He works as a bridge between different sections of society, power centers, individuals and institutions.

Keywords: Social media, Democracy, Society, Institutions, Communication.

Introduction

The warfare of social relations has been a part of human civilization in a way. Kitty Party and Ladies Club is a kind of social network where women with equal thinking and similar interest come on a platform. Gradually, the scope of these social relations increases as the form of a network. Social media was born with the incorporation of technology in similar networks. According to André Caplan and Michael Henleen, "Social Media is a group of Internet-based applications that have been built on the basis of ideologies and techniques and it provides users with the ability to create and exchange content." The social networking sites are increasing day by day in people of all age groups. Today, social networking is the number one activity on the Internet around the world, before this place got pornography. Social networking sites are a powerful way of communication and information, through which people can keep their talk without any interference. This thing reaches every corner of the country and the world. You are able to express your views openly and openly with others. According to one definition, 'Social media can be called a web-based, highly dynamic platform of interactive communication through which people communicate, exchange mutual information, and provide user-generated content for collaborative process of content creation. Modify as a fraction.

People in different countries of the world are using these social sites as per their comfort and environment. Social media was first discussed in the nineties when the first social media in 1994 came to the public in the form of Geosite. Its aim was to create a website through which people could share their thoughts and conversations with each other. In the

* M. A. (Sociology), University of Allahabad

early stages, it was made for use in only 6 cities, but today it has become popular all over the world. Today, many social networking sites like Facebook, Twitter, Google Plus, LinkedIn, MySpace, Pinrentrest Arct, are tie the world into a formula. The tradition of Internet-based social networking was done in 2002 by 'Friendster'. After some time, sites like 'My Space' and 'LinkedIn' were revealed. Facebook arrived in 2004, which is the most popular networking sites in today's date. 'Twitter' is the world's most popular social networking site. If you talk about statistics, one billion on Facebook, 20 million on Twitter, 17.5 million on Google Plus, 15 million on LinkedIn and more than 11 million users on pinrent are active. It is understandable that users of social sites can understand that on an average they spend 405 minutes on Facebook, 89 minutes on pinterest, 21 minutes on twitter, 17 minutes on LinkedIn and 3 minutes on Google Plus. Facebook and Google Plus in India, Google Plus in Brazil, 'Sky Rock' in France, the 'Cai World' in Korea, 'QQ' in China, and 'Vekontatte' sites are popular in Russia. Now, people of different classes have started socializing sites to share their thoughts. For example, 'Maximal' among the Muslim communities around the world, 'ResearchGate' is popular among scientists around the world. This is the reason why not only ordinary people but also special people are active on Facebook today. Politicians, filmmakers, literature, art, finance, media, ranging from the corporate world to government services and military officials are also making their presence on Facebook. People who do not find the right forum to talk about their mind, they are also writing a lot on social networking sites. Social networking sites have the highest number of Facebook. Currently there are more than 100 million members. About 2.2 billion people use the Internet globally, and about half of them have a profile on Facebook. Since its inception in 2004, it does not know how many displaced people have the opportunity to meet again on stage. This website, which started as a small effort, has become the world's leading social networking website today. According to an Internet survey conducted in January 2009, it is the most commonly used social networking website in the world. Alexa dot work, who analyzed the website, termed it as the second most important website in the world.

Significantly, Facebook did not start in one day, but it also has a history. On February 04, 2004, American young computer programmer Mark Zuckerberg started the website together with his three friends at Harvard University, Dustin Moskovitz, Eduardo Sverin, and Sighs. The main purpose of the launch of this website was to connect students at Harvard University. Gradually, the students of other universities from here joined the forum. In almost 10 years of its birth, Facebook and within 5 years, Twitter has created not only the special place among millions of people who use the Internet, but they have become the biggest weapon to speak for themselves. Neither Facebook's Mark Zuckerberg, Dustin Moskovitz, Eduardo Sauverin, Andrew McColum and Chris Hughes, nor the founders of Twitter, Evan Williams, Noah's Glass, Jack Dorsey and Biz Stones, have never thought that these social sites The effect of this will be as widespread as it is now seen, because of the social networks like Google's Orkut, Rediff's connections that started with or around Sites cannot show the same effect on consumers in the world. One reason for this is that Facebook and Twitter were supported by state-of-the-art tech mobile phones and in a visionary manner, they have made technical and user friendly changes over time. But there are no two opinions that Facebook and Twitter emerged as a powerful weapon of social movements in the early part of the first decade of the 21st century and in the early part of the second decade. Whether it is a movement related to the Arab Spring of 2011 or

there are political issues related to India in 2013, the vast use of Facebook and Twitter is seen everywhere. It is clear that in the new era of the twenty-first century, in the corner of the world, where the movement or political changes took place, the background of which was always the same - that is, the resentment of the present system, the resentment of the ruling parties, the aspiration of change Trying to raise voice against exploitation - whether it is Egypt or India's capital, Delhi - accelerated spread of Facebook and Twitter information and ideas everywhere and people together The proved a powerful medium to. Through social media, workers of mass media against the Hosni Mubarak government of Egypt also believe that these mediums on the internet proved to be the most useful for them. The Egyptian activist, Vale Ghonim, is very clear to say, "If you want to liberate people, then give them the internet".

Even if there is no real life meeting, everyone has thousands of friends on social sites. This virtual world has tied many of them into bonds of marriage. If you cannot even imagine meeting with real life, they can be in your friend list on Facebook and other social sites. Stars associated with the film and kikretta are connecting with people on social sites and sharing their stories with them. Traditional media is now also making its presence not only on pages like Facebook and Twitter, but also making use of opinions expressed by people on various issues. Electronic media is now taking the opinion of the public immediately through the parallel social media. Not only are they being made friends with this virtual world, but they are also being used from vote bank to finance the business. Academic debates are now expanding on Facebook and other social sites. Female discussions, child deliberations, Dalit discussions, tribal discussions, disagreements, everything is here. You can share them, like them, can comment, make a debate, and give new debates as needed. Social media revolutionizing the world of ideas is a medium that has no boundaries, no restriction. In many different countries of the world, including India, not just at the individual level, but also with the political parties, many social and non-governmental organizations are using social media to strengthen their campaigns. Social media is not just a way to show your face, but it has also turned interesting roles and ideological debates. In the countries where democracies are being strangled, people have also made democratization of social media to say their own words. Social media has played an important role in the revolution in the Arab world in recent years. People were connected to each other through it and played the crooks of revolution. Because of this the princesses did not like it. Because of this, it was banned in Iran, China, Bangladesh, Uzbekistan and Syria too. In India too, social media has an important role in taking the Anna movement to the peak.

In India, there has been talk of monitoring on Google, Twitter, and Facebook from time to time. It is not that social networking sites have not been bothered by the controversy. From time to time, it is a victim of criticism everywhere. Facebook has also emerged as a drug addict in several cases. Changing the regular profile photo on Facebook, updating states several times a day, chatting with hours of Facebook friends, such habits have affected the younger generation to a great extent. Sticking to Facebook for hours is not only affecting their studies, but the creativity of doing something new is also ending. All pornographic content and inflammatory things are being transmitted to people through social networking sites, which have a bad effect on the mind-brain of people. Social networking sites have forced people to live in virtual life rather than real life. It has become a game where happiness and misery and dreams are shared with each other and share with each other and

relationships are also blocked in the very next moment. In the same way, Facebook has declared in its policy that people above 13 years can join this website, but in May 2012, an Internet survey of 75 lakh children under the age of 13 were found to be associated with it. Unfortunately, many times these kids also become victims of cyber bullying on Facebook. Social networking has also been blamed in cases of divorce in the world. One out of every five survey states that Facebook is responsible for divorcing. Due to the excessive use of Facebook in office time, all the institutions have banned it here. According to a report by ASSOCHAM in India, most companies do not take good use of social sites within the office. Social networking sites today have become a symbol of a statue symbol, whose goodness and evils are also. It depends on you, what do you expect from social media? Social media can make you social and even lonely. On social media you can get fresh with your old friends, then you can also cheat with unknowingly. On social media, you can convince the world with your goodness and creativity and learn the evils of others. No medium is good or bad, but those who use it make it good or bad and this is also applicable on social media. According to information technology expert Sam Pitroda, social media is a powerful and unmatched tool to exchange information, create public opinion, connect people in different regions and cultures, and create the most important, new ways. If governments learn to leverage the best, social media can become a very effective policy tool for them. It is clear that social media is not the only way to show the face, but it is a medium of connecting people, saving memories through dialogue, interacting with them, creating discussions, and living and endless debate on various concerns. Social media has given birth to new citizens. These citizens themselves are also aware, others are also awake. This creates a new type of social solidarity. There is no restriction of caste, color or class in the virtual community generated by social media. This is a kind of social revolution that is virtual and you are participating in it sitting in the will of your house. Many times the virtual movement takes the form of real movement as seen during Anna Hazare's movement. He sought virtual support through social media, but due to the awareness created in the virtual world, millions of people came to the streets in their support. The interesting thing is that social media is also slowly becoming a major medium of news. All the issues that could not be found in the mainstream journalism were being presented to the society several times by social media.

Conclusion

In the modern era, the general meaning of the media is taken from newspapers, magazines, television, radio, internet etc. Media has a huge contribution in the advancement and progress of any country. If I say that the creation and reconstruction of the media society If it does, then it will not be wrong. There are countless examples in history when people have used it as a reliable weapon for people's change by recognizing the power of the media. The media has been a major contributor to fostering devotion and enthusiasm among the Indians who were enslaved by the enslavement of the British. Even today, bigger politicians, industrialists, etc., bow their heads in front of the power of the media. Media has also contributed a lot in public awareness. The campaign to promote polio drugs to children or spread awareness about AIDS, the media has played its role fully. Inspire people to vote, try to stop child labor, the dangers of smoking To make aware of the role of the media in many works, it is commendable. The media periodically keeps the citizens conscious about their rights. The country keeps a strict eye on the corrupt people. From time to time, the sting operation brings black face of these white collars to the face of the

world. Thus, the media is like a boon for us. After the technical activation, 'social media activism' has become a synonym for today's generation. Today, about two out of three Indians spend their time on online social networking sites like Facebook, Twitter, YouTube, Pintrest etc. Even now the tendency of sending personal emails compared to social media has become very old in society. But why is social media so popular in India? There are some important aspects like interaction, live chat, status updates, image- and video-sharing, which play an important role in increasing the popularity of social media. On the other hand, customer feedback, their contact and awareness of the brand has become the reason that many companies are making huge use of social media in India and around the world. Thus, various roles played by social media are known for its popularity all over the world, which are not limited to the main role of information communication only.

References

- "Indian News - India Newspaper - India Latest News - News From India - India News Daily - Current India News". Retrieved 14 May 2015.
- "The Constitution (Seventy-third Amendment) Act, 1992". Government of India. Archived from the original on 5 May 2003.
- "Social Networking Usage and Grades among College Students" A Major Project by Research Team, White more School of Business and Economics, University of New Hampshire
- Anirban Ghosh (17 October 2012). "Ganga is now a deadly source of cancer, study says". Times of India. Retrieved 25 June 2017.
- C. Y. Chang and Francis Kai, GaAs High Speed Devices: Physics, Technology, and Circuit Applications (John Wiley, 1994), p. 116.
- Department of Rural Development, Ministry of Rural Development, Government of India
- Education Week, Digital Directions. (June 14, 2010). Social Networking Goes to School. [Online].
- Elizabeth Shove, Comfort, Cleanliness, and Convenience: The Social Organization of Normality (Berg, 2003), p. 80.
- Encyclopædia Britannica. Archived from the original on 29 January 2012
- Horizontal Project. (2012) Impact on Education Social Networking. [online] available.: <http://horizonproject.wikispaces.com/Impact+on+Education+Social>
- Kabilan, M. K., Ahmad, N., & Abidin, M. J. Z. (2010). Facebook: An online environment for learning of English in institutions of higher education? Internet and Higher Education
- Kathleen M. Brown, Foul Bodies: Cleanliness in Early America (Yale University Press, 2009), p. 327
- Mazman, S. G., & Usluel, Y. K. (2010). Modeling educational usage of Facebook. Computers & Education
- Nath, Akshaya (24 April 2015). "National Panchayat Raj Day: Here are few things that you need to know about Panchayat Raj"

Mobilizing the Migrants : The Role of Diferrent Refugee Organization in the Indian State of West Bengal- A Critical Assessment

Minakshi Haldar*

The partition of 1947 called as a horrible anathema for the Bengalees. The partition was actually a sharing of power between the political leaders of the two countries, the result of which was borne by a large number of common people. May become an alien or foreigner in their own land. Resultantly, exodus of refugees began in both countries. After partition, Bengal and Punjab were bisected. Although in case of Punjab, the refugee issue was solved quickly in the post partition time by way of population exchange. But such policy could not be taken up in case of Bengal. Refugees kept coming from the East Bengal phase after phase. This arrival of the refugees took off during the time of 1946 Nawakhali riots. Soon after the 1947 partition, a large number of people came to West Bengal from East Bengal. In comparision to that, a very minimal number of people did the opposite. In the opinion of Jaya Chatterjee “ The exodus of Hindu refugees from East to West Bengal aws massive, by contrast the number of muslims who left West Bengal for eastern Pakistan after partition were relatively small. Most of them stayed on.”¹

The first phase began in 1946-49, second phase began during 1950-52, the third phase in 1952-60 and the forth phase took place from 1961 to 70.²

The minority population came to India from East Bengal phase by phase since 1946.

Thereafter, since post 1970 era, the same tradition is continuing till date. It is learnt from Prafulla Chakraborty's Prantik human book that till June, 1948, this number was 11 lakh and in 1951, it reached to 35 lakh.³ Between 1946 and 1954, the number of refugees staying in the Govt. shelter camps only was 5,57,544.⁴

According to Central Social Welfare Board number and AIWC's Ashok Gupta, a total of 28 lakh Hindus migrated to West Bengal, Assam and Tripura from East Bengal from the time of 1946 Nowakhali riots to the end of 1951. In 1956, the number increased to 39.84 lakh. Apart from this, another 30 lakh entered the territory of India who did not register themselves as refugees.⁵

The refugees who migrated early, can be divided into three categories. Those who came to west Bengal, soon after the partition were mostly upper caste middle class people, amongst whom, there were few dalits also. They managed their livelihood themselves around Kolkata and its surrounding areas. Many of them had been able to exchange properties and the educated ones amongst them successfully managed jobs for themselves. There were another class of people who were totally resourceless and entirely dependent upon government aid. Another type of refugees had been there who made colonies by illegally possessing waste lands, abandoned govt. buildings, army barracks etc. In 1948, historian Jadunath Sarkar told in a speech at the University Institute hall, “I warn West Bengal do not spurn away such a rich racial element when seeking shelter at your doors. They alone can make you great if you utilise these human materials.”

* Assistant Professor, Department of History, Swami Niswambalananda Girls' College, Bhadrakali Hoogly

The fact that the government had no true planning for rehabilitation of the East Bengal refugees can easily be perceived by having a look at the earlier rehabilitation camps. Most of the reluctant and superficial steps that were taken, were absurd and unreal.⁶ Besides this, the Central Government support in providing relief to the East Pakistan refugees lacked the same ardour that the government had in the case of the West Pakistan refugees. Till 1950, there were no rehabilitation department in the West Bengal government, so under these circumstances, the question of building their own existence loomed large to the proletariat people.

The discriminative policies of the Central Govt. on one hand, aloofness of the West Bengal Government, riddle of the govt. Rules and mal-treatment of the Govt. officers and their corruption on the other hand had made lives of the refugees intolerable. Amidst such situation, the refugees began to raise their demand unitedly for the sake of their every day needs.

Its limit increased gradually and the first refugee organization to form was the Nikhil Banga Bastuhara Karmaparishad.⁷ It was formed in 1948. In 1948, All India Refugee Conference was held at Naihati under the leadership of Amritalal Chatterjee. Gopan Banerjee, Ganesh Das, Mahadeb Bhattacharya, Binay Majumder, Chitta Basu were associated with the Bastuhara Karmaparishad. In this conference, demands were raised for permanent rehabilitation of the refugees.

On 14th January, 1948, an assembly of refugees took place at Sealdah station., led by the Nikhil Banga Bastuhara Sangsad. On that day, the Prime Minister Jawharlal Nehru held a meeting at the brigade Parade ground. As the refugees went on to submit memorandum before the Prime Minister by breaching section 144, which was imposed thereon, police lathicharged on them and fired tear gas. 75 persons including 3 women were arrested. In the month of August, 1950, communist affected parties like the Forward Block, Marxist Forward block, Socialist Republican Party collectively formed an organization called the Refugee Council. Many other organization of like nature were also formed such as Sara Bharat Bastuhara Sangsad, led by the Praja Socialist Party (PSP), East Bengal Relief Committee, which was formed by the RSP under leadership of Dr. Meghnad Saha, Bastuhara Kalyan Sangsad, formed by Soumendranath Thakur led R.C.P.I. and Subhasbadi Forward Block and its own organization, which were formed under the leadership of Smt. Leela Roy. Later on, in 1958, Jogendranath Mondal formed East India Bastuhara Sangsad.

The 1950s was actually the decade of intense refugee agitations. During this time, the opposition parties too, became vocal in refugee oriented issues. Earlier, the Communist party was not connected with the refugee movement, though, party worker were individually working with the refugees and they had direct involvement in establishing the refugee colonies, but as the communist party renounced the Joshi line and adopted the Ranvide line, they decided to form their own organization within the refugees. Under the leadership of Binay Majumder (who had been working with the refugees since earlier times), Udvastu Cell was formed. The opposition parties raised an intense movement against the refugee mobilization policy of the central government. This intensiveness has been depicted in Prafulla Chakravorty's Prantik, 'The refugees made Kolkata into a city of marches, into a city of Nehru's nightmare. Procession, unrest, meeting, traffic jam, brick-shower, tear gas, lathicharge, fire in buses and trams and occasional police firing are the special features of the city. A tipsied Kolkata had the experience of massive

processions, unrest, meeting, tear gas, lathicharge, police firing during the trial of the Azad Hind leaders, but the same never became a daily phenomenon.⁸ In 1951, the West Bengal Govt. enacted the Eviction Act for the purpose of freeing the forcefully possessed colonies. The refugee movement became tumultuous orienting this act of 1951. In demand of repealing the eviction bill and giving recognition to the illegally possessed colonies, intense movement was taken up by the refugees. From this time, the movement began to spread in the districts. In the end, 149 illegally possessed colonies got recognition in 1954.⁹ In 1951, according to the proposal of the central government, the Chief Minister of West Bengal took initiative for mobilizing the refugees to Andaman. Till January, 1952, 1583 refugees from 392 families were kept in the vacant outposts of the Cellular Jail in Andaman. And later they were given rehabilitation in places like Andaman Court, Guptipara, Hamphryganj, Vayoshar, Wandur etc. At this time, the U.C.R.C. started movement by vehemently opposing this transmission of refugees to Andaman, as a result of which, no further refugees were sent to Andaman again. In 1954, as per the report of the Mantri Committee, decision was taken to rehabilitate the refugees outside West Bengal. Each and every organization, associated with the refugee movement opposed to such decision.

In a proposal, adopted at the fourth conference of the joint Bastuhara Parishad at Coopers Camp, Ranaghat, on the 7th, 8th and 9th December, 1957, it was expressed that the Government's attempt to send the refugees out of West Bengal is an attack on the united movement of the refugees. A failed Government in refugee mobilization lodged this attack on the refugees in order to divide and isolate them, after being scared of their movement.¹⁰ Apart from this, the subject of appointment of an expert committee to inquire the possibility of recovering the water-logged land area in Sundarban was also mentioned in the conference, and demand was raised to rescind the Dandakaranya project. From 17th March, 1957, under the auspices of Suresh Chandra Bandopadhyay, Dr. Pabitra Mohan Roy, Jogendranath Mondal, Haridas Mitra, a 35 day-long satyagraha was taken up with demand of rehabilitation of the refugees. Later, the U.C.R.C. participated in the satyagraha. The then Chief Minister of West Bengal, Bidhan Chandra Roy had declared in written that no refugee will be sent to Dandakaranya against their will and the ration of the unwilling refugees, which had been stopped, will soon be resumed. But in October, 1959, prime Minister Jawaharlal Nehru told in a press conference in Kolkata, "Even if the sky falls down on us or riot takes place in every lane of Kolkata, still we are resolved to shut the refugee camps."¹¹ During this time, popularity of Jogendranath Mondal was at the rise among the refugees because a large part of the refugees hailed from the namasudra community, with whom, Jogendranath Mondal already worked in East Bengal. As a result of that, the refugee movement began to be directed by the anti-Dandakaranya project programmes from this time. This time onwards, popularity of Jogendranath Mondal started increasing among the refugees. From 1957, he lighted into the refugee movement with the U.C.R.C. with demand of mobilizing the refugees within West Bengal and opposing the Dandakaranya project at the same time. Later, the U.C.R.C. decided not to adopt any radical movement on the question of Dandakaranya proposition and their movement gradually became town oriented, as a result of which, they went aloof from the refugees of the districts. Influence of Jogendranath Mondal increased in the districts camps also. Refugees from the Coopers and Bagjola camps refused to hold meeting or form any association without Jogendranath. In 1958, while carrying out Satyagraha, Jogendranath

was arrested and remained in jail for 35 days. At this time, on discussion with the leftist leaders, Jogendranath perceived that their main objective is political gain rather than the interest of the refugees. So, on being released, he formed the 'Est India Bastuhara Sangsad' (P.B.B.S) in July, 1958 and carried out satyagraha collectively with S.B.B.S. From 1958-59 onwards, Jogendranath's popularity started to increase comprehensively among the refugees. On 22 December, 1959, the refugees, led by Jogendranath Mondal, started satyagraha and also submitted memorandum before the rehabilitation department. The satyagrahees burnt effigy of the central rehabilitation minister Meherchand Khanna. On 9th January, Jogen Mondal was arrested. The campus turned furious in protest. Incessant hunger strike began in Bagjola, Madhabpur and Baltia camps. After 12 days, the government acceded to their demand of releasing Jogendranath and 14 strikers withdrew their hunger strike. After his release, Jogendranath Mondal submitted an alternate rehabilitation plan of the Dandakaranya proposal, wherein, he demonstrated how the refugees could be given settlement within West Bengal. But the government rejected his proposal. In 1961, fresh hunger strike began in Bagjola camp opposing the Dandakaranya proposal. On 26th June, police opened fire at the strikers. Four refugees were killed in the incident and many sustained injury. On 30th June, mourning day was observed at various camps in protest to the incident. Jogendranath held meetings in protest at Subodh Mallick Square demanding punishment of the perpetrators. On 14th August, the P.B.B.S. undertook Writer's building campaign. On 15th September, the P.B.B.S. and S.B.B.S. jointly submitted memorandum before the Chief Minister and the President. In spite of the movement, shipment of refugees to Dandakaranya continued in different phases. The government somehow managed to enfeeble the agile pace of the refugee movement through mobilization of large number of refugees to Dandakaranya.

Source

- The Spoils of Partition : Bengal and India, 1947-1967.
- Amalendu Dey, Prasanga Upanibesh, Barnaparichay, Kolkata(1970).
- Prafulla Chakraborty, ; The Marginal Man', Prantik Manab Pratikshan, Kolkata 1971.
- Hiranmay Bandopadhyay, Udbastu Sahitya Sansad.
- Ashoke Gupta, A Note on Rehabilitation of Refugees from East Pakistan (1964), Ashoke Gupta Papers/ Correspondences Exchanged with Rehabilitation Ministry and other regarding Relief and Rehabilitation, Sub-file 1, N.M.M.L.
- 6. Anil Singha, Paschimbange Udbastu, Kolkata 1995.
- 7. Prafulla Kumar Chakraborty, Prantik Manab, Paschimbange Udbastu Jibaner Katha, Pratifalan Publication Pvt. Ltd. , Kolkata-1997, p-35-38.
- 8. Do.
- 9. Anil Singha, Jabardakhal Colonir Daliler Sangram Smaranika 2000.
- 10. Proposal and Claim Warrant adopted in the Fourth Conference of the Sonmilito Kendriya Bastuhara Sansad.
- 11. Anandabazar Patrika, 22nd October, 1959.

Impact Of Real Variables On Stock Market-An Empirical Investigation

PARAKH AGGARWAL*

Abstract

Nowadays the stock market is a matter of great interest for the policy makers, investors as well as the researchers. This paper is a fresh attempt to reveal the relationship between the real economic variables & the stock market in Indian context. The paper considers the annual data of selected economic variables like GDP, Inflation rate, Foreign Institutional Investments, Exports of the country, Exchange rate etc. for the period ranging from 2008 to 2018 wherein the Indian economy has registered high & low growth rates.

The present paper tries to unravel the relative influence of the Indian economy as well as the foreign market on the capital markets.

The study also examines the behavior of Indian stock market with emerging stock market in light of P/E ratios of different indices. Price earnings ratios are widely applied by the investors to make investment decisions & to determine the future behavior of stock prices. The findings show the impact of the certain selected variables on the Indian stock market in the considered period while assuming the influence of other variables to be negligible.

Key Words – Indian stock market, Real economic variables, stock prices

Introduction

Indian stock market has seen many up and downs and one of the major falls is 2008 financial crisis. The **financial crisis of 2007–2008**, also known as the **Global Financial Crisis** and **2008 financial crisis**, is considered by many economists the world's worst financial crisis since the Great Depression of the 1930s. It resulted in the threat of total collapse of large financial institutions, the bailout of banks by national governments, downturns in stock markets and severely effecting consumer's wealth around the world.

The crisis could be due to many reason say strategic complementarities in financial markets, Leverage, Asset-liability mismatch, Uncertainty and herd behavior, Regulatory failures, Contagion, Recessionary effects.

The present study ventures to analyse the impact of fiscal & financial variables on the stock market. The paper evaluates the annual data of major economic variables that have a considerable impact on the stock market indices. These variables are domestic economic variables GDP, inflation & international financial variables like forex reserves and Indian export.

The study also examines the behaviour of Indian stock market with emerging stock market in light of P/E ratios of different indices. The performance in growth levels of economy go hand-in-hand with stock market & its returns.

The results are beneficial for the policy makers as large numbers of investors make their investments decisions considering the fluctuations in the stock prices and returns & they somehow forecast the future performance of stocks. The findings show that these variables have been considerably influencing the stock market movements.

* M.Com, NET JRF

Laying down any result without comparing India in context with other nations will make the study irrelevant. Hence, in light of these facts, the study attempts to unravel the relation between sensex returns & ranging trends in economic variables & thus examine its impact on stock market.

Now, here is a brief introduction of the terms we have used in our analysis.

- **Stock market**-It is a total of purchasers and dealers where securities like share, debentures, bonds and so forth are exchanged to permit organizations to access capital. The right term to be utilized relating to the physical area for exchanging stock will be stock exchange. Each nation may have two or three stock trades that are generally exchanged on just one trade despite the fact that a great deal of enormous companies might be recorded in a few distinct areas.
- **Exchange Rate**- The amount at which country's currency might be changed over into another. The exchange rate is utilized for changing over one currency to another or for taking part in speculation or for dealing in foreign stock exchange.
- **Forex reserves**- These are the assets with the national banks and money related authorities, ordinarily in various currency for the most part the US dollar and to a lesser degree the Euro, the Chinese Yuan, the UK pound sterling and the Japanese Yen and are utilized to back its liabilities.
- **FII** – Foreign Institutional Investor or investments. Portfolio investment largely made by foreign institutional investors to diversify their portfolios internationally in the form of purchase of tradable securities with a view to play in capital market and make speculative gains hence named foreign institutional investment.
- **P/E ratios** – It is calculated as the market price per share divided by annual earnings per share. From P/E ratios the valuation of stock of any company & shares of that company is calculated in relation of income that company is generating.
- **Inflation (WPI)** - Wholesale Price Index commonly known as WPI and also called headline inflation, as the name proposes it gauges the pattern in wholesale prices over different heads of essential articles, fuel and power and fabricated items. The present data for WPI has a base year of 2011-12. The weightage given to essential articles is near 20%, while fuel and power has weightage of around 15%, rest 65% weightage has been allocated to fabricated or manufactured items.
- **Inflation (CPI) - Consumer Price Index:** Customer Price Index (CPI) is most likely the best estimation of inflation for a typical man in India. This number demonstrates the inflation that an individual needs to, all things considered, face. CPI is intended to quantify changes after some time in the dimension of retail costs of chosen merchandise and enterprises on which customers of a characterized gathering spend their wages.

Research Methodology

The present study requires gathering relevant data from the specified documents & websites in order to gather the required material & arrive at a better understanding of the relationship between the stock market and an economy's performance. Past economic surveys proved to be an effective source for collecting data related to GDP, Inflation rate, Exchange rate P/E ratios & reserves. Cyber space was a point of reference for piling up the figures of FIIs & Exports.

Findings

Table 1

Domestic Economic Variables & India Stock Market

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Inflation (WPI)	4.7	8.1	3.8	9.6	9.1	7.6	12.5	13.9	9.7	11.6	14.9
Inflation (CPI)	6.39	8.32	10.83	12.11	8.87	9.3	10.92	6.37	5.88	4.97	2.49
GDP at Factor Cost*	7.66	3.08	7.86	8.49	5.34	5.45	6.38	7.41	8.15	7.11	6.68
Sensex Return	46.7	-52.5	79.7	17.4	-25.1	28.7	8.5	29.6	-5.1	1.97	27.9

*GDP at Factor Cost is calculated by taking base year as 2010-11.

Table 2

Financial Variables & Indian Stock Market

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
For ex reserves (in bn\$)	309.7	252	279.1	304.8	294.4	292	304.2	341.6	360.2	370	422.5
Indian export (in bn\$)	163.1	185.2	178.7	249.8	305.9	300.4	314.4	310.3	262.2	275.8	303.5
Transactions of FIIs (in bn\$)	16.4	-10	30.1	32.1	19.6	30.9	9.13	44.51	-2.88	7.28	21.34
Exchange Rate(Rs. vs \$)	41.35	43.51	48.41	45.73	46.67	53.44	56.57	62.33	62.97	66.46	67.79
Sensex	46.7	-52.5	79.7	17.4	-25.1	28.73	8.5	29.6	-5.1	1.97	27.9

Table 3

Comparison of P/E ratios of Indian Stock Market with emerging stock markets

COUNTRY	INDEX	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
THAILAND	SET	10.59	15.7	12.3	13.2	12.6	17.26	15.77	18.5	20.33	20.43	17.86
INDONESIA	JCI	19.54	20.1	16.6	13.8	26.3	14.47	14.47	18.51	13.53	15.35	13.98
MALAYSIA	KLCI	16.97	15	18.9	15.8	16	15.15	16.13	16.04	16.06	16.81	17.19
TAIWAN	TWSE	17.92	65.7	19.1	17	16.4	22.96	18.94	16.62	13.85	16.34	16.02
INDIA	BSE SENSEX	22.61	15.66	20.13	21.6	18.5	17.09	17.38	18.73	20.18	20.62	23.78

TABLE 4

Comparison of Indian Stock Market returns with developed countries

Country	Index	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
India	Sensex	46.7	-52.5	79.7	17.4	-25.1	28.73	8.5	29.6	-5.1	1.97	27.9
United States	NASDAQ	9.81	-40.54	43.89	16.91	-1.8	15.91	38.32	13.4	5.73	7.5	28.24
Germany	DAX	22.29	-40.37	23.85	16.06	-14.69	29.06	25.48	2.65	9.56	6.87	12.51
Japan	Nikkei 225	-11.13	-42.12	19.04	-3.07	-17.33	22.94	56.72	7.12	9.07	0.42	19.1
Hong Kong	his	39.3	-48.27	52.02	5.32	-19.97	22.9	2.87	1.28	-7.16	0.39	35.99
United kingdom	FTSE100	3.3	-31.33	22.07	8.99	-5.55	5.84	14.43	-2.71	-4.93	14.43	7.63
Australia	AORD	18	-40.4	39.6	3.3	-11.4	18.8	19.7	5	3.8	11.6	12.5
Switzerland	SMI	-3.43	-34.77	18.27	-1.68	-7.77	14.93	20.24	9.51	-1.84	-6.78	14.14
Sweden	OMXS30	-6.04	-41.96	46.66	23.05	-16.69	12.02	23.18	11.86	6.59	5.83	6.41

Research analysis

TABLE 1

GDP and inflation are often associated with one another because governments and central banks often make decisions based on these figures and they attempt to manipulate them.

According to this belief system, prices are pushed up when people are competing for a limited supply of items. This means that an increase of GDP, or growth in the amount of goods and services, should equate to a reduction in the level of prices for those items, or that deflation should occur, for those looking to use economic lingo. Everyone does not agree that this relationship is absolute.

Table 1 presents a summary of descriptive statistics of the variables like GDP and inflation and returns of sensex. One can very well point out the volatility in SENSEX by looking at the figures which shows the trend of SENSEX growth over past 11 years. One can easily make out from here that how SENSEX has grown tremendously .The trend is shown in Table 1 indicates that real economic factors like GDP has grown steadily over the period of time(except the periods with negative sensex returns and overall downfall in global economy) with not much erratic movements in between. Just like GDP, Inflation is showing an up and down effect as it has low .Hence the basic conclusion that comes out is that although these variables are moving in the same direction but are not fundamentally caused by each other. There is not causality between stock exchange indicator i.e., sensex and real GDP in India. In other words, it can be said that Stock market in India has not yet become strong enough to influence the Real economy.

TABLE 2

Table 2 canvasses the relationship between various financial variables and their impact on stock market. These financial variables are:

1. Exports

As is clear from table 2, India's exports have been witnessing robust growth. Except for a slowdown in 2008-09 followed by a fall in 2009-10 due to lingering effect of global recession. Major factors contributing to this growth are improved global growth, high paced growth of domestic economic activity, export oriented policy initiatives, the opening up of economy and consequent restructuring of industry, rationalization of tariff structure and the list is on.

Inflationary pressure has made the cost of products sky high thereby discouraging the consumers and having a telling effect on our exports. But still India stands insulated from the impact of the crunch as Exports underwent a tad decline of \$4 billion in 2009-10 and from there on exports are augmenting. As exports and sensex returns share a positive relationship, the sensex returns and exports followed a same course of growth.

2. Transactions of FIIs

Investment by foreign institutions is a highly volatile component of foreign capital as it moves in or out of the country at the slightest changes in country's economic environment and profit expectations. The inflow of FII was modest prior to 2007-08 when there was a surge of \$16.4 billion in Indian capital markets. Then the financial meltdown and economic recession caused a net outflow of \$ 10 bn. However the significant amount of investment in 2009-10 and 2010-11 reflects revival in growth prospects in the economy. In 2011-12, though India again experienced a slowdown, we soon muddled through the situation with investment in FII again showing a positive growth level.

3. Forex Reserves

Since 2005-06, forex reserves were rising in India but underwent a downfall in 2008-09 consequent to worldwide recession and the need to finance country's imports by using such reserves, the forex reserves declined to \$252 bn. The reserves gradually improved to \$304.bn by March 2011 but again declined to \$292 bn by the end of March of March 2012 and a negligible increase of \$ 3 bn observed in 2012-12.

Forex reserves and sensex returns share a positive relationship as a augmentation of forex reserves will enhance the confidence of investors in markets of such economy and hence bullish sentiments egging on the investors to employ their funds in corporate sector of the economy.

To the contrary the foreign exchange reserves and sensex returns hardly share any kinship because the reserves are affected by other variables too. Thus the stock markets could not leverage much benefit from forex reserves. It can be accessed from the table when sensex returns were high in 2008-09, the forex reserves stood at low levels and in 2009-10 when the forex reserves were rising, the sensex returns were falling.

4. Exchange Rate

Indian currency's value is depreciating perpetually. The sensex returns and exchange rate share a positive relationship. This can be proved both through theoretical evidence and empirical results. The depreciating exchange rate has resulted into increased sensex returns for the market as the cheap Indian currency attracted more foreign investors into the market and enhanced foreign flow of funds thus turning out to be in favour of stock prices.

TABLE 3

Stocks with low PE can be considered good bargains as their growth potential is still unknown to the market. If the PE is high, it warns of an over-priced stock. This was evident in the recent market crash when the stocks of all Reliance companies fell sharply. Emerging markets offer equity investors growth, and less debt and deficits, and can provide portfolio diversification.

The attractiveness of a stock market steps up with low price earnings ratio coupled with high growth potential of emerging markets.

The most volatile of all markets under consideration is Indonesia with sharp turns and twists in price earnings ratio each year making the transactions riskier in such environmental context. The next comes the Taiwan which was significantly affected at the times of crisis as prices of stock shoot up to peak levels and earning prospects descended. The next is Malaysian market the stock prices of which touched a low at the times of crisis. Thailand stock index rather maintained a composed routine in terms of P/E ratio acceleration rate with rise at the time of crisis. The most stable of all is India with rather stagnant momentum of price earnings ratio and touching a low of 15.66 in 2008-09 and 23.78 in 2017-18 which is a good indicator for economy as Indian stock market becomes an attraction point for both domestic and foreign investors due to its high growth earning prospects. Hence Malaysia and India were the only emerging market economies which showed good earning prospects at the time of crisis while in other markets downward trend in stock prices accompanied by feeble earning prospects made the markets expensive. The Indian economy looked to be relatively insulated from the global financial crisis that started in August 2007 when the sub-prime mortgage crisis first surfaced in the US. However the second round of impact took toll on Indians stock markets as FII outflow was

magnificent and exchange rate depreciated though P/E ratio showed positive progress but could not retain this position for a long time.

TABLE 4

Any country's growth is basically determined by its revenue share from tertiary sector and industrial sector. Stock Market Returns are the returns that the investors generate out of the stock market. In a broader sense it depicts the profits made by the companies and dividends declared by them in any financial year.

As shown in the table here numbered as 4, we have different developing countries, their indexes, and year ranging from 2007 to 2017. Well starting from India our index, which is named as sensex, has reported 27.9 % returns in the year 2017- 2018. In 2008- 2009, 2011-2012 and 2015-16 negative results were recorded which were -52.5%, - 25.1% and -5.1% respectively. We have achieved highest returns in year 2009-10 that is 79.7%. Countries like Germany, Japan and Hong Kong had lower returns than India but they showed better results in 2013-14. However, in 2017-18 India's returns were lower than United States and Hong Kong only.

Conclusion

After almost 10 years of depression of 2007-08, India has not shown much growth in the terms of stock markets. Though many improvements have already taken pace and many are in draft stage still sensex can't be termed as a real indicator of GDP growth in the economy. India has shown a very less increment and has failed to compete with nations like Japan and Germany. However India ranks above Singapore, Korea and Taiwan but still the growth in India has not seen its golden phase till now.

References

Darrat, A.F. and T.K. Mukherjee, 1987, The Behavior of the Stock Market in a Developing Economy, Economics Letters 22, 273-278.

DeFina, R.H., 1991, Does Inflation Depress the Stock Market?, Business Review, Federal Reserve Bank of Philadelphia, 3-12.

Sharma, J.L., 1983, Efficient Capital Markets and Random Character of Stock Price Behavior in a Developing Economy , Indian Economic Journal 31, no.2, 53-57.

Rbi

Data.gov.in

www.indiamacroadvisors.com

data.worldbank.org

commerce-app.gov.in

www.bookmyforex.com

www.fpi.nsdl.co.in

investinghaven.com

thebalance.com

topforeignstocks.com

bseindia.com

planning commission of india

<http://www.1stock1.com>

ceicdata.com

www.set.or.th

finance.yahoo.com

www.twse.com.tw

Khan, MY.(2018). Indian Financial System. Chennai, Mc Grawhill (India) Private Limited

Mishkin, F.S. (2013) Economics of money, banking and financial markets 10th ed. Pearson Education Limited ISBN9780273765851.

Wikipedia.com.

A Study On The Review To Reveal Various Themes In The Selected Novels Of Chetan Bhagat

Komal*

Abstract

Chetan Bhagat is a noteworthy name with regards to composing of fiction as he has been known as the good example of the young in India. He has expounded on six fictions and one true to life and nearly in each novel he has not just featured his profound worry about the young today for example what are the issues, expectations and goals of the adolescent yet in addition love sex and marriage, present day culture and ladies liberation. This exploration is a little endeavor to think about the above themes.

Keywords- Various themes, selected novels, Chetan bhagat

Introduction

Chetan Bhagat (conceived on 22 April,1974) is a contemporary Indian writer who has composed seven novels in particular :- "Five Point Someone: What not to do at IIT! (2004), One Night @ the Call Center (2005), The 3 Mistakes of My Life (2008), 2 States: The Story of My Marriage (2009), Revolution 2020: Love, Corruption, Ambition (2011), What Young India Wants, Half Girlfriend (2014), individually. He experienced childhood in Delhi in a Punjabi family in a questionable home condition where his folks used to battle a great deal. His dad, a military officer, was severe and he wasn't permitted to sit in front of the TV or movies. In this way, Chetan and his sibling used to make up motion picture stories and maybe that is the place this propensity of composing all jumped up.

Bhagat went to Army Public School (1978-1991), Dhaula Kuan, New Delhi. He contemplated Mechanical Engineering at the Indian Institute of Technology (IIT), Delhi (1991-1995), and afterward learned at the Indian Institute of Management (IIM), Ahmadabad (1995-1997), where he was named "The Best Outgoing Student". He experienced passionate feelings for his IIM Ahmadabad cohort Anusha and they in the long run got hitched. His novel "2 States: The Story of My Marriage", is an anecdotal variant of his romantic tale. Subsequent to moving on from IIT and IIM, he joined Peregrine, a money related administration organization in Hong-Kong. It shut down in a half year however Chetan remained on in Hong-Kong for a long time, moving to Goldman Sachs. It was to show disdain toward his supervisor that he began composing his first novel. Most likely it was an incredible minute for Bhagat yet he was in a bank and disappointed. His supervisor was terrible. So to deliver retribution on him he began writing in office.

Chetan Bhagat is one of the noticeable contemporary novelists who have earned a noteworthy spot in the hearts of the young today. He is a functioning and ready author who keeps a note of exact moment things occurring in the environment. His novels are loaded with invented stories pursued by a portion of the pertinent and consuming issues of our general public. He has attempted his dimension best to bring numerous issues up in his

* Research Scholar, English Literature

works so the consideration of the perusers might be attracted to tell them that they are living with these issues and as has been in all respects properly said that one man can failing to bring about an insurgency single helpfully as can be found if there should arise an occurrence of Raghav in 'Transformation 2020'.

Reflected Themes in the fictions of Chetan Bhagat

Chetan Bhagat is an undying name with regards to composing of fiction as he has been known as the good example of the young in India. He has expounded on 7 fictions and one true to life and nearly in each novel he has featured his profound worry about the young today for example what are the issues, expectations and yearnings of the young. His novels give us a reasonable image of his worry. May it be through Ryan's voice or Vroom's, through Govind or Krish, through Gopal or basically by methods for specific articles in the number one spotting papers.

Bhagat is the first to concede that he is no Arudhati Roy, the Indian Booker Prize winning writer and says he realizes commentators feel his books are shallow. However, Bhagat, who appreciates a hero like prevalence among his perusers, matured for the most part 13 to 30, said he has a definitive iposte—"My books sell." Bhagat says that he composes for 'normal youngsters' who feel choked by their folks' craving for them to progress toward becoming specialists, attorneys, or engineers. As per Bhagat-Indian youths live under strain cooker conditions to succeed. There is merciless challenge to win puts in India's tip top colleges with youths constrained to score very from essential to secondary school. Access to top colleges regularly requires 90% in addition to midpoints and most kids have after-school mentoring to accomplish such stamps. A paragon of this way of thinking can be found in his novel " One Night @ The Call Center", where the saint, who picks up the telephone calls from dumbfounded Americans about their cooking apparatuses, comments, "Each cousin of mine is turning into a specialist or designer,... ..you can say I am the odd one out of my family."

Bhagat accepts that India will in general have a scholastic and social upset to counteract youngsters essentially spewing what they realize without speculation. He needs to pass on this message crosswise over to the Indian youth regardless of whether they don't get stratospheric marks, they are as yet qualified for a glad life; and it's not the apocalypse on the off chance that they fall flat. He by and large discussions about youths' stresses, their nerves and each one of those things which engross them, by methods for his compositions. His composition subjects incorporate parental scholarly weight alongside pre-marriage sex, drinking and different points forbidden in socially preservationist India.

The six chose works of Chetan Bhagat for the present investigation are Five Point Someone: What not to do at IIT! 2004, One Night @ the Call Center 2005, The 3 Mistakes of My Life 2008, 2 States: The Story of My Marriage 2009, Revolution 2020: Love, Corruption, Ambition 2011, Half Girlfriend 2014. Following are a few themes which are reflected in the fictions of Chetan Bhagat.

Love, Sex and Marriage

All through his novels Chetan Bhagat has given accentuation on the treatment of affection, sex and marriage as subject. In Bhagat's fiction the demeanor of young people towards adoration, marriage, and sex isn't at all enthusiastic; unexpectedly it is very easygoing. Love, as it is an instinctual feeling the youthful age feels the vibrations of it occasionally, yet the manner in which they propose it and the doing adoration have unquestionably changed. As we find in his fictions, there are love proposition and dismissals, yet

everything is taken soundly or state in a self evident reality way. In India, where marriage is a holy observance, a man and a lady living respectively without getting hitched is a wrongdoing. Be that as it may, most of Chetan's heroes appreciate Pre Marital Sex. No other author of the past, yet Bhagat purified sex in his works. They viewed the hesitance of the lady in it, though Bhagat has introduced it in the ability of the lady. Ideal models for this position will be the sexual connection among Hari and Neha in Five Point Someone, Shyam and Priyanka in One Night @ The Call Center, Govind and Vidya in The 3 Mistakes of My Life, Knish and Ananya in 2 States, Gopal and Aarti in Revolution 2020. As Bhagat would see it, young ladies are not the slightest bit second rate compared to young men. They are equivalent to them in all regards. He is a promoter to the freedom and strengthening of ladies, yet the pity is that he has risen to them just in doing the wrong things and taking incorrectly turns like Neha making the most of her loss of virginity and expressing gratitude toward her accomplice, which demonstrates her appetite and need for sex. He has even raised the issue of Inter position Marriage in his works.

Representation of Youth

In the third section there will be the point by point investigation of the portrayal of youth in the novels of Chetan Bhagat. Nearly in each novel he has featured his profound worry about the young today for example what are the issues, expectations and yearnings of the young. His novels give us an unmistakable image of his worry and the present paper depends on those issues as it were. May it is through Ryan's voice or Vroom's, through Govind or Krish, through Gopal or essentially by methods for specific articles in the main papers. All through his novels he has attempted to display the various issues that the adolescent is confronting. Everybody is attempting to get accomplishment in their battle in affection, business, work, relations and so on. The young introduced in the fiction has expectation and desire. They are idealistic. Due to these novels has mass intrigue.

Modern Culture and Modern Trend in Indian Society

The third topic goes for setting up the definite investigation of the Modern Culture and Modern Trend in Indian Society as reflected in the novels of Chetan Bhagat. He focuses on the significance of rethinking the social qualities. He expounds on India as an Indian. He expounds on every part of India like its way of life, its issues, and its language and portrays the life of youthful age. As indicated by Bhagat the present youthful India needs a decent life, a great job and sentiment - "meri naukri, meri chokri". Bhagat says;"The youth need to initially satisfy their very own needs and simply after that are they willing to help a specific reason. The present youth needs a decent well-paying occupation ('naukri') and a pleasant sweetheart ('chokri') in a better than average urban city. I don't believe there's anything amiss with that yet what is significant is to acquire that living truly, with uprightness and magnificence and without trading off the guiding principle that construct our general public". The conventional Indian social orders in a condition of transformation. The old practices and traditions have not offered approach to new and consequently makes struggle in the life of the characters. Chetan Bhagat has written in his novels about affection, sex and marriage. He has exhibited new age ladies in his novels. This occurred in the cutting edge culture that he all around talked.

Status of New Generation Women:

It is attempted to consider the Status of New Generation Women as reflected in the novels of Chetan Bhagat. His characters are social renegades and his female heroes help us to remember the Natural female impulse. The spot of activity of his novels is set in the

buzzing about of Metropolitan Indian urban communities. With the developing urbanization and globalization, various open doors have opened up all around. People are no more observed through the old scene which marksmen as predominant and ladies as sub-par. In this worldwide air, so far put down ladies are given their due spot and regard. With their very own insight and capacities, they are believed to work shoulder to bear with men. They gain their very own living and settle on profession decisions. In this way, Bhagat's composing is more ladylike than manly. He gives voice and demonstrates his worries more to his women than to his legends. Like Shakespeare, he also has the right to be condemned for making preferred courageous women over legends. Bhagat claims ladies strengthening as one of the beneficial outcomes of globalization; in the meantime, it is undeniable that his novels unquestionably give us social stuns which are an inescapable effect of globalization, modernization, and corporate abuse. These progressions speak to the lamentable cry of a dominant part of conventional Hindu ladies in Indian culture, subsequently, it is comprehended that being under the appearance of liberation, there is a genuine degeneration in the status of ladies as voiced forward in the novels of Chetan Bhagat.

Conclusion

Chetan Bhagat all around effectively has treated above themes in his novels. Indian youth some place felt himself one of the characters in his novels as the focal one, as it is a mind-blowing story. Chetan Bhagat all around treated Love, sex, marriage and yearning, trust, pre-marriage connection and battle of Indian youth. It is the Indian youth that made Chetan Bhagat India's ever smash hit Indian English author. Chetan Bhagat all around utilized the social locales, devices in his novels. It isn't just Indian youth yet in addition the adolescent in overall felt Chetan Bhagat as incredible essayist.

At long last it is suggested for new specialists that one must examination his works in the light of Multi culturalism and woman's rights. This exploration could contribute incredibly in the field of abstract Criticism.

References

Primary Sources

1. Chetan Bhagat, *Five Point Someone: What not to do at IIT!*, New Delhi:Rupa, 2004
2. Chetan Bhagat, *One Night @ the Call Center!*, New Delhi:Rupa, 2005
3. Chetan Bhagat,!, *The 3 Mistakes of My Life* , New Delhi:Rupa, 2008
4. Chetan Bhagat,!, *2 States: The Story of My Marriage*, New Delhi:Rupa, 2009
5. Chetan Bhagat,!, *Revolution 2020: Love, Corruption, Ambition*, New Delhi:Rupa, 2011
6. Chetan Bhagat,!, *Half Girlfriend*, New Delhi:Rupa, 2014
7. Mishra, Ravi Kumar. *Representation of modern culture and modern trend in Chetan Bhagat fiction*. Research Scholar-An International Refereed e-Journal of Literary Explorations. <http://researchscholar.co.in/downloads/46-dr.-Ravi-Kumar-Mishra.pdf>
8. Rao, K. Damodar 1995. *Penance as Multiple Response in Githa Hariharan's The Thousand Faces of Night Set III* : vol.4, ed. R. K. Dhawan. New Delhi: Prestige Books.
9. Bhagat Chetan: "A Real Taste of Refined Post Modern Indian Literature", *Thematics Journal of English Criticism: A peer-reviewed interdisciplinary International Research Journal*, Vol-1 Issue 1 (Nov- 2011), ISSN: 2249-5959, Ed: Manisha Gahelot, Pp.13-14 http://shodhganga.inflibnet.ac.in/bitstream/10603/13700/12/12_appendix.pdf

- 10.** R. A. Vats. Chetan Bhagat: A Libertarian. Research Scholar - The Criterion: An International Journal in English.
- 11.** P. Somwanshi. Social realism in R. K. Narayan and Chetan Bhagat's novels: a comparison- Thematic Journals. ISSN 0975-8313 Vol 3. Issue 3. Sep 2012. pp. 174-181. Paper ID: 0012012050.

डॉ० भीमराव अम्बेडकर जी का भौक्षिक योगदान और आज का युवा वर्ग

डॉ० हरीश कुमार*

प्रसंग

किसी भी समाज एवं राष्ट्र के निर्माण के लिए उस देश के नागरिकों का जागरूक होना आवश्यक होता है। और समाज में जागरूकता गहन अध्ययनशीलता एवं स्व: चिन्तन से आती है। इसके लिए हमें बाबा साहेब डॉ० भीमराव अम्बेडकर जी के शिक्षा दर्शन अर्थात् समाज में उनके शैक्षणिक योगदान को समझना होगा, जिन्होंने हमारे समाज में अनेक विभूतियों में गिने जाने योग्य तथागत बुद्ध के धम्म को नई ऊर्जा एवं चेतना से सराबोर किया। वर्तमान समय में युवा पढ़ने से अधिक भोग की वस्तुओं को पहले जुटाने का प्रयास करता हैं। जिससे निश्चित ही पढ़ाई में बाधा उत्पन्न होती है। बाबा साहेब के मात्र विचार ही प्रेरणा के स्रोत नहीं हैं, बल्कि उनके समस्त जीवन से हम प्रेरणा प्राप्त कर सकते हैं। प्रस्तुत शोध में डॉ० भीमराव अम्बेडकर जी शैक्षणिक योगदान समाज के लिए किस प्रकार प्रेरणा का स्रोत बन सकता है, और आज का युवा वर्ग बाबासाहेब के विचारों से प्रभावित होकर एक अम्बेडकर युवा कैसे बन सकता है।

भूमिका: शिक्षा एक आन्दोलन है, अगर शिक्षा स्पष्ट लक्ष्यों को पूरा नहीं करती तो वह निरर्थक है। डॉ० भीमराव अम्बेडकर के स्पष्ट विचार थे की जो शिक्षा आदमी को योग्य न बनाये, समानता एवं नैतिकता न सीखाये, वह सच्ची शिक्षा नहीं है। सच्ची शिक्षा तो समाज में मानवता की रक्षा करती है, अजीबिका का सहारा बनती है। आदमी को ज्ञान और समानता का पाठ पढ़ाती है सच्ची शिक्षा समाज में जीवन का सृजन करती है।

बाबा साहेब जी निश्चित तौर पर आधुनिक भारत के प्रमुख सिद्धान्तकारों में एक विशेष महत्त्व रखते हैं उन्होंने अपने कार्यों से आधुनिक भारत के इतिहास को गहराई से प्रभावित किया। जैसा की जान एडम् ने कहा " शिक्षा दर्शन का एक गत्यात्मक पहलू है"। यह बात राष्ट्र भक्त, समाज सुधारक और दर्शनिक अम्बेडकर के सन्दर्भ में सही साबित होती है। शिक्षा के क्षेत्र में अपने योगदान के लिए आधुनिक भारत के शिक्षाविदों में महात्मा गाँधी, स्वामी विवेकानन्द, स्वामी दयानन्द सरस्वती, महर्षि अरविन्द, मदन मोहन मालवीय आदि प्रसिद्ध हैं।

डॉ भीमराव अम्बेडकर के शिक्षा सम्बन्धित विचारों का विधिवत् अध्ययन अभी तक नहीं हो पाया है। जबकि उन्होने 1924 की शुरुआत में बहिष्कृत हितकारणी सभा का गठन करते ही शिक्षा के क्षेत्र में कार्य शुरू कर दिया था। इस सभा ने शिक्षा को प्राथमिक बनाया खास कर पिछड़े वर्गों के बीच उच्च शिक्षा और संस्कृति के विस्तार हेतु कॉलेज, होस्टल, पुस्तकालय, सामाजिक और अध्ययन केन्द्र खोले। बाबा साहेब जी ने 1928 में डिप्रेस्ड कक्षा एजुकेशनल सोसाइटी का गठन किया उन्होने 1945 में समाज के पिछड़े तबकों के बीच उच्च शिक्षा फैलाने के लिए लोकशैक्षिक समाज की स्थापना की। डॉ अम्बेडकर ने केवल अर्थशास्त्र, विधि, संविधान और राजनीतिक विज्ञान के क्षेत्र में ही काम नहीं किया बल्कि उन्होने समाजशास्त्र, धर्म, दर्शन, मानवशास्त्र आदि से सम्बन्धित काफी लेखन कार्य किया। शिक्षा के क्षेत्र में भी उनकी गहरी दिलचस्पी थी, वे केवल सैद्धान्तिक तौर पर ही इस क्षेत्र में काम नहीं कर रहे थे, बल्कि अच्छे सिद्धान्तों को समाज में भी फलीभूत करना चाहते थे। अम्बेडकर जी सोचते थे की लोगों का जीवन स्तर उठाने के लिए शिक्षा सबसे महत्वपूर्ण अस्त्र है। उनका नारा भी था शिक्षित बनो, संगठित रहो और संघर्ष करो।

दलितोत्थान के लिए अन्य क्षेत्रों में उनके अभूतपूर्व योगदान की वजह से उनके शिक्षा संबन्धी विचारों का सही मूल्यांकन नहीं हो पाया है। बाबा साहेब के सम्पूर्ण वाङ्मय का अध्ययन करते समय यह निश्चित हुआ की बाबा साहेब के बहुत से विचारों को नजरअन्दाज किया गया है, केवल उन्ही वक्तव्यों सामने लाया गया जो आम जनमानस को रुचिकर लगे।

शिक्षा का निजीकरण

वर्तमान समय में सर्वाधिक निजीकरण शिक्षा का हुआ है। जिससे हालात यह है कि गरीब तो छोड़िये, जो साधारण नौकरी वाला व्यक्ति है वह अपने बच्चों को मनमाफिक शिक्षा मुहैया नहीं करा पा रहा है। बाबा साहेब जी ने भविष्य के इस सम्भावित दृश्य पर गम्भीर चिन्तन करते हैं। बम्बई विधानसभा को अपने वक्तव्य में कहा था की "छानबीन करने से मुझे यह पता लगा की आर्ट्स कालिजों पर जो खर्चा होता है। उसका 36 प्रतिशत भाग फीस से मिलता है और हाईस्कूलों पर जो खर्चा होता है उसका 31 प्रतिशत भाग फीस से आता है। शिक्षा तो एक ऐसी चीज है जोकि

* एसोसिएट प्रोफेसर एस्ट्रान कॉलेज ऑफ एजुकेशन (मेरठ)

सबको मिलनी चाहिए शिक्षा विभाग ऐसा नहीं है जो इस आधार पर चलाया जाये की जितना वह खर्च करता है उतना विद्यार्थियों से वसूल किया जाये। शिक्षा को सभी सम्भव उपायों से व्यापक रूप में सस्ती बनाई जानी चाहिए।

डॉ० अम्बेडकर जी का दलितों की शिक्षा हेतु संघर्ष

जहाँ तक डॉ० अम्बेडकर जी के शिक्षा सम्बन्धित विचारों का सवाल है उन्होंने बहिष्कृत हितकारणी सभा की ओर से भारतीय सांविधिक आयोग को बम्बई प्रेसीडेसी ने दलित वर्ग की शिक्षा की स्थिति के बारे में एक वक्तव्य दिया जो डॉ० अम्बेडकर जी के सम्पूर्ण वाङ्मय भाग 4 में संकलित है। डॉ० अम्बेडकर जी के सम्पूर्ण वाङ्मय भाग 19 में अनुसूचित जातियों की बाकी शिक्षायातों के साथ शैणिक शिक्षायातों का भी उल्लेख किया गया है जिन्हे दों भागों में बाटा गया है—उच्च शिक्षा के लिए सहायता का अभाव और तकनीकी प्रशिक्षण के लिए सुविधाओं का अभाव।

आमतौर पर आजादी की बात करते समय लोग दलितों की बात भूल जाते हैं लेकिन आज हम सब फिर से आजादी का जन्म मना रहे हैं। तो इस बार दलितों की आजादी की बात भी होगी। यह एक ऐसा तबका था जो दौहरी गुलामी का शिकार था। जिसे आजादी दिलाई डॉ० अम्बेडकर जी ने 12 नवम्बर 1930 को गाँधी जी के नागरिक अवज्ञा आन्दोलन से घबराई सरकार ने सम्मेलन बुलाया लेकिन इस सम्मेलन में शामिल एक युवा बैरिस्टर ने गाँधी जी को पूरे भारत का नेता मानने से इन्कार कर दिया था। और उनका नाम था डॉ० अम्बेडकर जी बाबा साहेब उपेक्षित पिछड़ों के कोई हक और अधिकार न छिन पाये, इसके लिए सरकार को निगरानी करने के लिए हमेंगा से कहते आये हैं। बाबासाहेब ने कहा वर्तमान शासन के अन्तर्गत अनुसूचित जाति वर्ग खुद को दनिय स्थिति में महसूस कर रहा है। वे ऐसे लोगों से घिरे हुये हैं जो उनकी महत्त्वकांक्षों उनकी विकास और प्रगति की इच्छाओं में किसी तरह भागीदार नहीं बन सकते हैं। इसलिए मेरा कहना यह है कि इस बात की ओर अधिक आवयकता है कि सरकार किसी निरीक्षक ऐजेन्सी को अपने सीधे नियन्त्रण में नियुक्त करे, जो यह देखे की वे निकाय जिनको शिक्षा जैसा महत्त्वपूर्ण काम सोंपा गया है वे वंचित उपेक्षितों की उपेक्षा न करे। डॉ० अम्बेडकर से पहले 19 वीं सदी के आखिरी दौर में महाराष्ट्र में जोतिबाफुले जैसे समाज सुधारक गुलामगिरी जैसी किताब लिख कर बहामणवादी कर्मकण्डों पर कड़ा प्रहार कर चुके थे। अगर हमें पूरे भारतीय इतिहास में से एक ऐसा आदमी चुना हो जिसने दलितों के लिए शिक्षा और रोजगार का मार्ग प्रस्त किया, उनके अधिकारों के प्रति उन्हे जागरूक बनाया, दूसरे समुदायों के शोषण से उन्हे मुक्त किया बुद्धि के क्षेत्र में भी उनकी श्रेष्ठता सिद्ध कर दी। इन तमाम विषयताओं से युक्त डॉ० अम्बेडकर ही मिलेंगे। उन्होंने शिक्षा के बारे में महात्मागाँधी या दयानन्द सरस्वती की तरह शिक्षा शास्त्रीय ढंग से तो विचार नहीं किया लेकिन उन्हे जहाँ भी अवसर मिला, उन्होंने शिक्षा के बारे में अपनी स्पष्ट बात रखी। और इस प्रकिया में उनकी दलित समाज की शिक्षा को लेकर चिंताएँ भी प्रकट हुईं। उन्होंने लिखा यदि भारत सरकार दलित जातियों के बीच शिक्षा का प्रसार सच्चे मन से करना चाहती है तो सरकार को बहुत से उपाय करने चाहिए।

डॉ० अम्बेडकर वादी युग और आज का युवा वर्ग

देश आजाद होने के बाद अनुसूचित जाति, पिछड़े, आदिवासी अल्पसंख्यक समाज के युवा वर्ग शिक्षा ग्रहण करते हुये प्रत्येक क्षेत्र में बेहतर प्रदर्शन करते हुये लगातार आगे बढ़ रहे हैं। तब ऐसी स्थिति में सरकारों की यह जिम्मेदारी बनती है की देश का कोई भी युवा अर्थ के अभाव में अपनी शिक्षा न छोड पाये। क्योंकि भारतीय संविधान के अनुसार देश के प्रत्येक नागरिक का यह अधिकार है कि वह अपने देश में बेहतर शिक्षा ग्रहण करे इस विषय में बाबा साहेब कहते हैं। अब हम उस स्थिति पर आ गये हैं। जब समाज के निचले तबके के लोगों के बच्चे हाईस्कूल और मिडिल स्कूल और कॉलिजों में जा रहे हैं। इसलिए इस विभाग की नीति निचले वर्गों के लिए उच्च शिक्षा को जितना सम्भव हो सस्ती बनाने की होनी चाहिए।

उच्च शिक्षा के वर्तमान हालात का यदि हम विमर्श करे तो बाबा साहेब के विचारों से बिलकुल उल्टी स्थिति प्राप्त होती है। उन्होंने शिक्षा के क्षेत्र में निजीकरण को पूरी तरह से बन्द करने की बात कही थी। क्योंकि निजीकरण से देश समाज के हित में पढ़े व्यक्ति का ही नुकसान होता है। वर्तमान समय में देश के अन्दर 70 से 80 प्रतिशत संस्थाएँ निजीकरण के हवाले हैं जिससे उच्च शिक्षा के हालात बहुत बिगड़ चुके हैं। मानव संसाधन विकास मंत्रालय की ओर से 20 मार्च 2018 को घोषणा की गयी जिसमें विवि विद्यालय अनुदान आयोग नई दिल्ली द्वारा 5 क्रेन्दीय विवि, 21 राज्य विवि, 24 डिम्ड विवि, 2 निजी विवि को स्वयत्ता प्रदान की गयी है। जिसकी वजह से सामाजिक न्याय की अवधारणा प्रतिबन्धित हो कर अन्याय, अत्यचार एवम् धन उगाही के स्थल बन जायेगें एवं वंचित, अपेक्षित, आदिवासी, पिछड़ा, अल्पसंख्यक एवं गरीब तबके के लोगों को हवाले में डाल दिया जायेगा, जहाँ डिग्री तो प्राप्त हो रही है। किन्तु ज्ञानवहीन युवाओं की भीड़ पैदा की जा रही है। और इन विवि और महाविद्यालयों में शिक्षक की हालत क्लर्क से भी बतर का दी गयी है। यह अनुसंधान तो बहुत दूर बल्की कक्षा शिक्षण भी महयया नहीं हो रहा है। जबकि बाबा साहेब डॉ० अम्बेडकर शिक्षक के संर्दभ में कहते हैं जिस प्रोफेसर को गुलाम जैसा काम करना पड़ता है। वह कभी भी सच्चे अर्थों में अध्यापक नहीं बन सकता है। वह एक साधारण कर्मचारी ही बन सकता है और तैयार

पूँजी की मदद से ही अपना काम करेगा हम उससे कोई मौलिकता की उम्मीद नहीं रख सकते। और वह उन विद्यार्थियों को जिसको दर्भाग्यिवंन उससे पढ़ना पढ़ रहा है कोई प्रेरणा नहीं दे सकता है। सारा शिक्षण मात्र ही यान्त्रिक प्रक्रिया बनकर रह जाता है।

बाबा साहेब डॉ० अम्बेडकर के मात्र विचार ही प्रेरण के स्रोत नहीं है, बल्कि समस्त जीवन से हम प्रेरणा प्राप्त कर सकते हैं। वर्तमान समय में युवा पढ़ने से अधिक भोग की वस्तुओं को पहले जुटाने का प्रयास करता है, जिससे निश्चित ही पढ़ाई में बाधा उत्पन्न होती है। और कुछ युवा तो लगातार कोई न कोई वस्तु न होने का बहाना बनाकर शिक्षा से दूर भागते नजर आते हैं। गरीब परिवार के बच्चों के लिए बाबा साहेब सर्वाधिक प्रेरणादायी हैं। क्योंकि बाबा साहेब ने बहुत ही कष्ट के साथ पढ़ाई की धन का आभाव बहुत रहा, लेकिन उन्होंने पढ़ाई बन्द नहीं की बल्कि दौगुणा ऊर्जा के साथ अध्ययन किया और निरन्तर सफलता की ओर अग्रसर हुये।

मेरा मानना है की कोई युवा सच्चा डॉ० अम्बेडकरवादी तबही हो सकता है तब है धनाअभाव की प्रवाह किये बिना निरन्तर संघर्ष के साथ उनके प्रथम सूक्त शिक्षित बनों को पूर्ण करे। कोलम्बिया विवि में बाबा साहेब प्रतिदिन 16 से 18 घण्टें तक गहन अध्ययन करते थे। ओर पुस्तकों से उन्हें बेहद लगाव था।

निष्कर्ष

बाबा साहेब डॉ० अम्बेडकर शिक्षा के माध्यम से ही सभी का मार्ग प्रस्त करते हैं। उनका स्पष्ट मत था कि शिक्षा के बिना सामाजिक उत्थान सम्भव नहीं है। और सामाजिक उत्थान के अभाव में संस्कृतिक परिवर्तन नहीं किया जा सकता है। एवं संस्कृतिक परिवर्तन किये बिना अछूत का भी स्वाभिमान और समान प्राप्त करने के योग्य नहीं हो सकता है। भले ही अनुसूचित जाति विद्यावाचस्पति की उपाधि हासिल कर ले वह निम्न ही रहेगा। इन सबके बाद भी भारतीय संविधान की दृष्टि से मानव मानव एक समान की आवधारणा में सभी मनुष्य स्वयं को श्रेष्ठतर स्तर पर शिक्षा के माध्यम से ही ले जा सकते हैं। बाबा साहेब स्पष्ट लिखते हैं शिक्षा और समाज का अटूट रिश्ता है क्योंकि शिक्षा से ही समाज के संस्कृतिक उन्नयन का आधार है वे कहते हैं कि समाज अपना स्तर ऊँचा उठाने के लिए जिस सामूहिक पद्धति से प्रयास करता है। वह शिक्षा है समता मूलक समाज निर्माण के लिए सबको शिक्षा मिलनी जरूरी है। बाबा साहेब अम्बेडकर शिक्षा को सार्वगीण विकास का मुख्य आधार मानते हैं, इसलिए उन्होंने पहला सूत्र ही शिक्षित बनो दिया है। बाबा साहेब तर्कील समाज पर आधारित एक अधुनिक भारत का निर्माण करना चाहते थे। जबतक इसकी जरूरत बनी रहेगा, डॉ० अम्बेडकर हमें प्रांसगिक रहेगे।

सन्दर्भ सूची

- डॉ० बाबा साहेब अम्बेडकर सम्पूर्ण वाङ्मय, खण्ड 03, प्रकाशक- डॉ० अम्बेडकर प्रतिष्ठान, सामाजिक न्याय एवं अधिकारिता मंत्रालय, भारत सरकार, नई दिल्ली, 7 संस्करण, 2013 अक्टूबर पृष्ठ 42, 57, 60, 61, 63, 64
- बाबा साहेब डॉ० अम्बेडकर सम्पूर्ण वाङ्मय, खण्ड-19, पृष्ठ-23, 24
- बाबा साहेब डॉ० अम्बेडकर, सम्पूर्ण वाङ्मय, खण्ड-4, पृष्ठ-146

Glass Probe Fiber Optic Extrinsic Sensor – Determination of Refractive Index of Binary Liquids at Different Temperature Levels Using Multimode Step-Index PCS Fibers

DR. S. VENKATESWARA RAO & S. SRINIVASULU*

Abstract: Determination of refractive index plays a crucial role in most of the application areas, such as industries like food processing, beverages, chemical processing, aromatics, fragrance, and pharmaceuticals, and so on and so forth. A novel model of an intensity modulated fiber optic sensor based on a U-Shaped glass rod to measure the refractive index of liquids at various temperature levels is described in the present paper. A U-Shaped glass rod having specific dimensions is connected between a light source operating at the wavelengths of 630nm & 820 nm and a light detector using two PCS fibers. Maintaining liquid mixtures (mixtures of benzene and acetone) around the glass rod using a glass beaker and rising the temperatures to various levels, light is injected into the fibers and the power reaching the detector is recorded. The power reaching the detector is a function temperature of the liquid at various concentrations. Thus the sensor is calibrated by plotting a graph between the output power and refractive index of liquids at various temperatures. The calibrated curve generated can be used to measure refractive index of any liquid either it is opaque or transparent in the dynamic range of $1.5n_D$ to $1.36n_D$ at the operating wavelengths of 630nm and 820nm and at the temperature range between 303°K to 333°K.

Keywords: *Benzene and acetone, Calibrated curve, Dynamic range, Intensity modulated fiber optic sensor, Operating wavelengths of 630nm and 820nm.*

I. Introduction

The versatility with advantages in the field of fiber optic sensors is responsible for many revolutions various sectors in science and technology. This has been primarily brought about by invention of LASER in 1960 and subsequent developments in LASER technology. The first fiber for telecommunication purpose was demonstrated by K.C. Kao and Hockham in the year 1966. Comparing with electrical communication systems, the optical communication suffered a huge loss (1,000 dB/km) in the beginning i.e., around early 1970's. The loss mechanism in optical fibers was exploited to construct a new type of sensors and systems. Thus the R & D activity becomes intensive across the world, in the field of sensors, which lead to the emergence of the subject of fiber optic sensors and devices. Due to their wide range advantages, they have been implemented to determine innumerable environmental parameters by designing the sensors variously. Intensity modulated sensors using the light interruption mechanism has been used to develop the fiber optic transverse displacement, longitudinal displacement and angular displacement sensors [1–3]. For the detection of displacement in hazardous environments, several optical fiber micro switch devices are used [4]. The shutter induced light interruption between two opposed fibers was used to develop grating based acoustic wave sensor [5]. Several kinds

* Department of Physics, JNTUH College of Engineering Hyderabad – 500085, Telangana State, India

of intensity based multimode fiber optic reflective sensors have been reported in literature [6–17]. Fiber optic based cross-talk sensors for the detection of oil films on the surface of the water and analog measurements of liquid levels and temperature have been developed by a team of researchers [18–20]. The configuration of fiber optic spirit level using a Y-coupler made out of plastic fibers in which single end of the fiber coupler was cut into a conical shape was reported in the literature [21].

II. Experimental Details

The experimental arrangement constituted by connecting the U-shape glass rod to a light source and light detector using two multimode step-index PCS fibers. The basic components of experimental arrangement consist of mainly four parts.

1. A light source of operating wavelengths of 630nm and 820nm.
2. Light detector compatibility to detect the source wavelength.
3. Two plastic clad silica (PCS) fibers of 200/230 μ m diameters of core and cladding respectively.
4. A borosilicate U-shaped glass rod of specific dimensions.

In addition to this experimental setup, a two burette system is used to measure the volumes of the liquids to take them into different ratios and hence proportions. Each mixture of liquid is separately taken into a glass bottle and tightly sealed with suitable lids. Abbe's refractometer arrangement is employed to determine the refractive index of liquid mixtures using sodium vapour lamp emitting radiation at 5893A° [Fig.1].

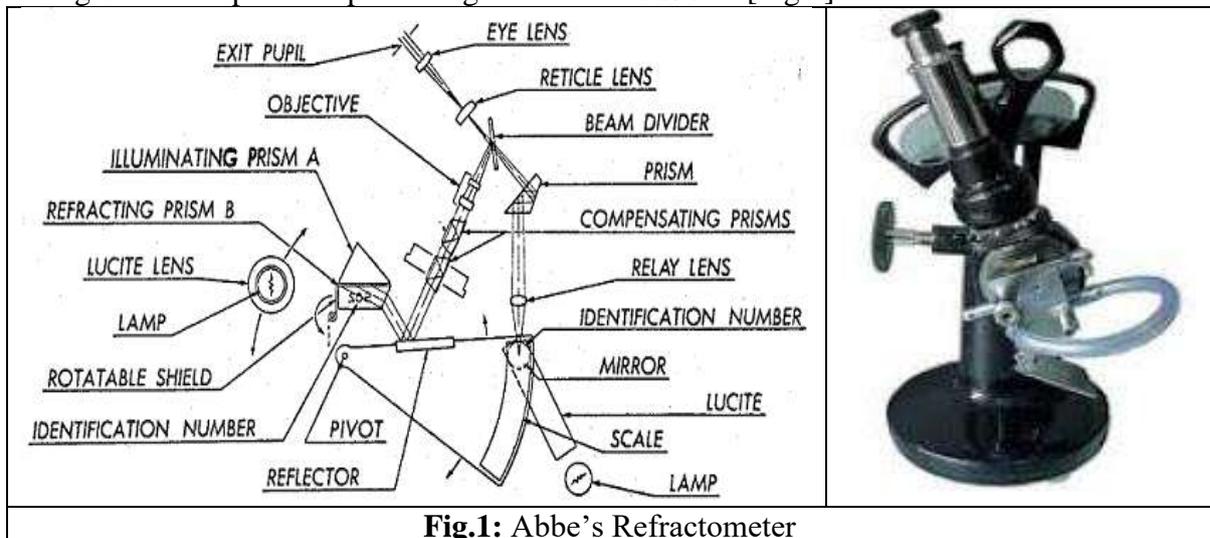


Fig.1: Abbe's Refractometer

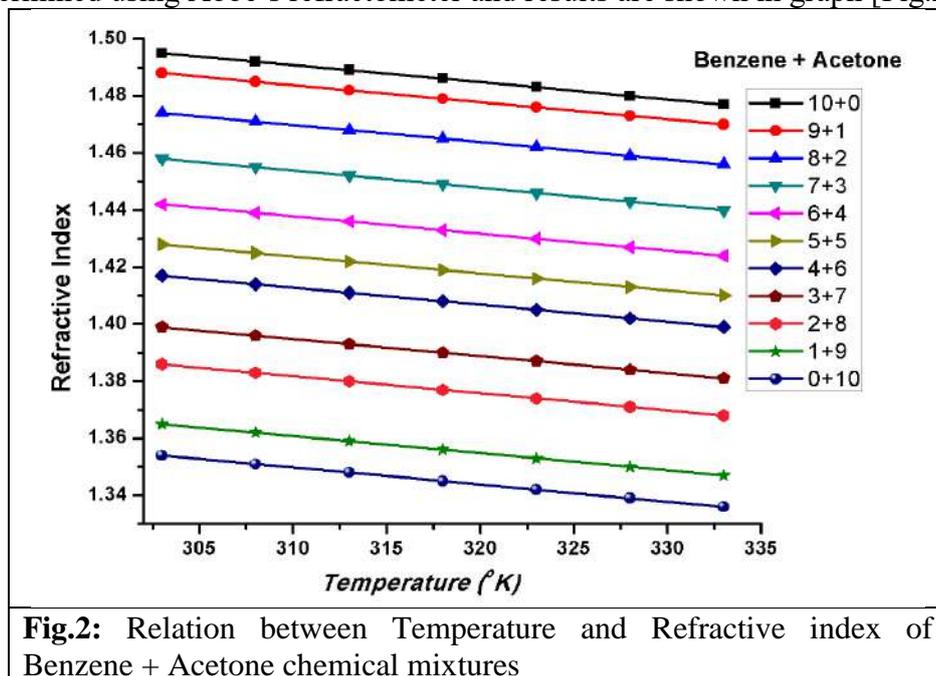
One of the ends of the U-shaped glass rod is connected to a light source using an input PCS fiber of 50cm length using suitable connectorization and the other end of the U-shaped glass rod is connected to detector operating at the source wavelength 630nm and 820nm. The U-shaped glass rod is immersed separately into each liquid mixture and heating the liquids using an electrical heater, and then light launched from the source is noted from the detector and recorded. The U-shaped glass rod region in the middle of the fiber optic link acts as a sensing zone of the sensor. In this sensing zone the glass rod acts as the core of the fiber and liquid that surrounds the glass rod acts as a cladding in the sensing region.

The light transmission from the source to detector takes place in three parts of the sensor. In the first part, the light launched from the source coupled into the input fiber and propagates without any attenuation and hence, the first part becomes insensitive to any

environmental parameter. Because of the special arrangement in the second region, a fraction of light attenuates into the liquid cladding, and will be coupled out to the output fiber arm. In the third part, light will transmit without any attenuation and will be returned into the detector. The light reaching the detector is observed to be inversely proportion to the concentration of the liquid mixture around the glass rod. Thus this relationship can be used to develop a standard graph, which can be used to find the refractive index of any unknown liquids.

III. Results And Discussion

The study of refractive index of liquids at various temperatures plays a crucial role in many fields of science and technology. Several sensors have been used for this purpose across the world, which were reported in the literature. The variations of three parameters such as refractive index, temperature and output power were studied and also their dependence on one another is investigated experimentally. The transmission of light in the presently developed sensor is influenced by mainly five parameters. 1. Wavelength of light, 2. Length of liquid cladding, 3. Concentration and hence refractive index of liquid mixture, 4. Temperature of liquid mixture, 5. Type of fibers used. Keeping the type of fiber, wavelength of light source (630nm), length of liquid cladding fixed, the study is taken up by recording the power output varying the concentration and temperature of liquid mixture. The variation of refractive index and hence the concentration of the liquid mixtures has been determined using Abbe's refractometer and results are shown in graph [Fig.2].



The temperature study of liquid mixtures has been taken up by immersing the U-shaped glass rod into liquid mixtures and simultaneously heating, the output power is noted and the results are plotted graphically [Fig.3].

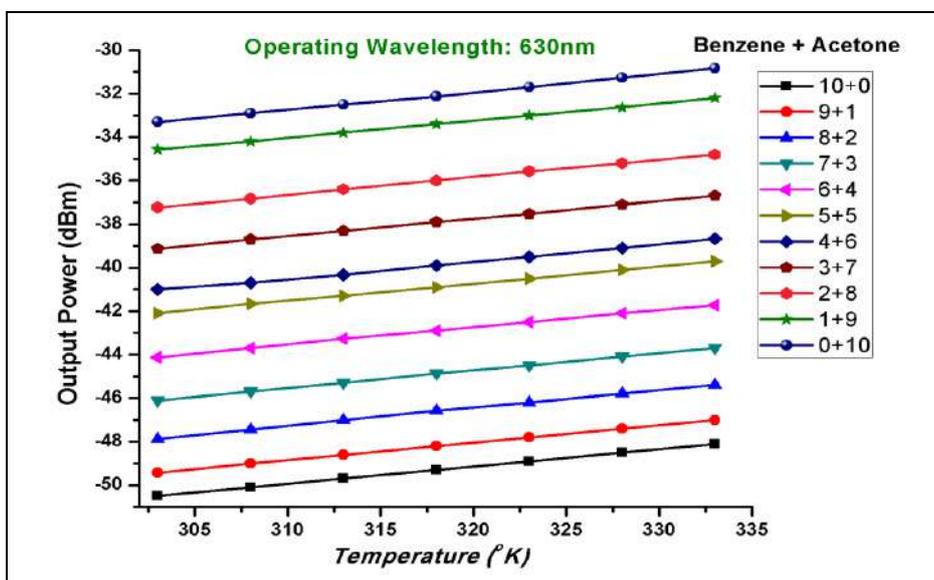


Fig.3: Relation between Temperature and Output Power (dBm) of Benzene + Acetone chemical mixtures at operating wavelength of 630nm.

After realizing variations of temperature, output power and refractive index and their dependence on one another, it is decided that it is appropriate to show them in a single graph by drawing a 3dimensional graph [Fig.4].

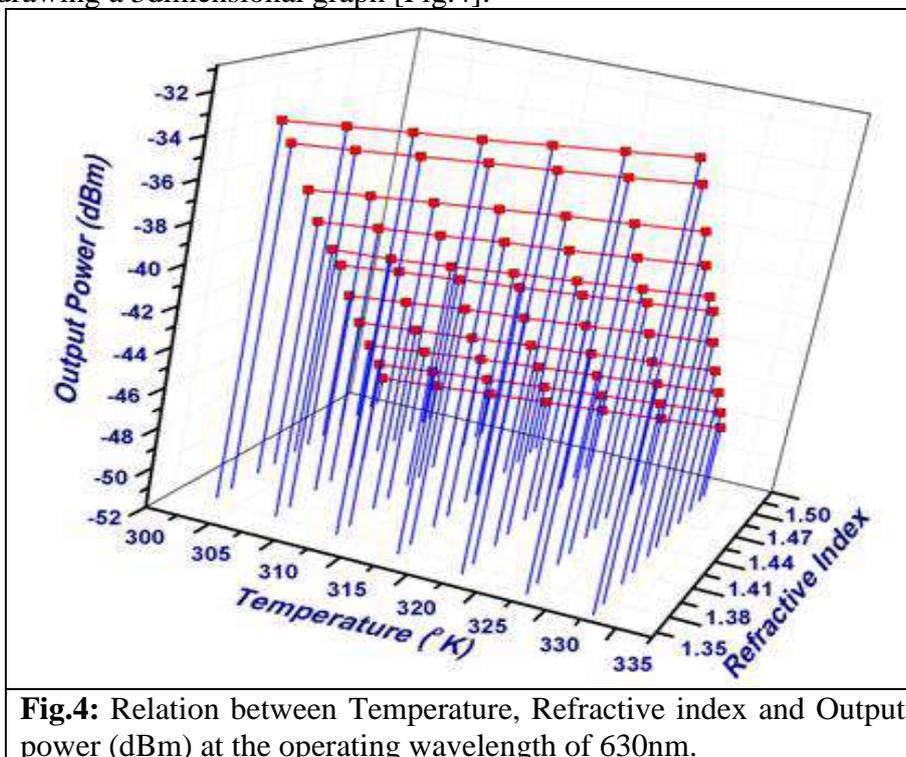


Fig.4: Relation between Temperature, Refractive index and Output power (dBm) at the operating wavelength of 630nm.

The experiment further repeated selecting a source operating wavelength of 820nm and using same liquid mixtures. All the results obtained using 630nm were cross checked with the help of study of 820nm wavelength and were compared one another by plotting corresponding graphs [Fig. 5-6].

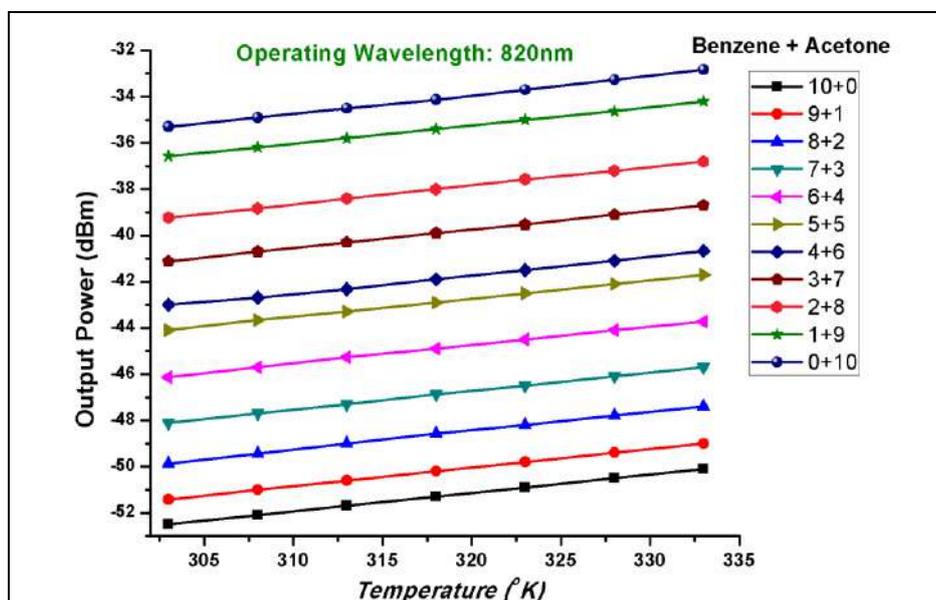


Fig.5: Relation between Temperature and Output Power (dBm) of Benzene + Acetone chemical mixtures at operating wavelength of 630nm.

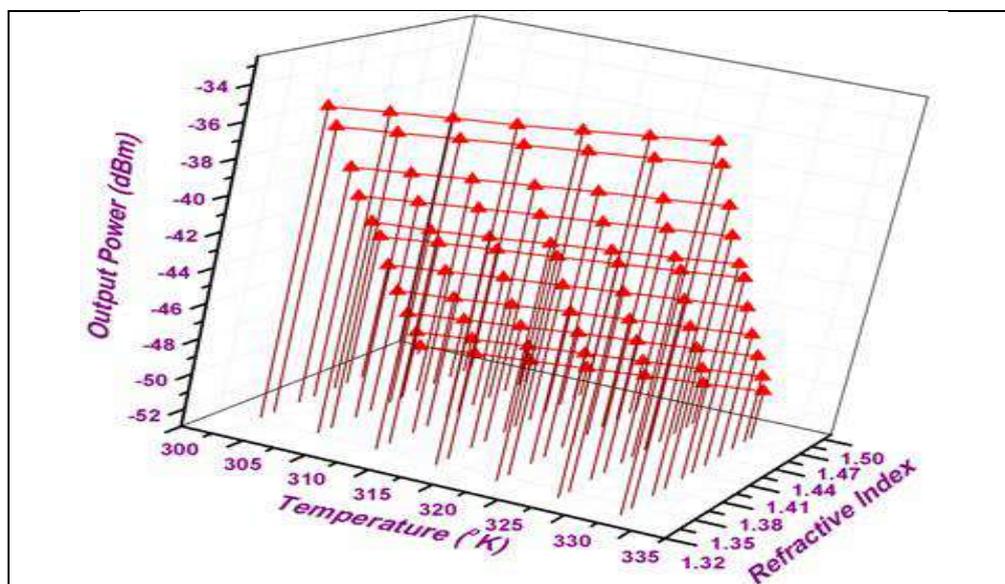


Fig.6: Relation between Temperature, Refractive index and Output power (dBm) at the operating wavelength of 8200nm.

IV. Conclusion

Study of variation of refractive index with temperature has been taken up using Abbe's refractometer using sodium vapour lamp emitting the radiation at 5893A°, and results are plotted graphically, and it is concluded that as the temperature increases, the refractive index decreases. It is observed that the output power decreases as the temperature of the liquid mixture decreases, which was conformed using both light sources. From the data obtained and the corresponding graphs plotted, it is seen that the output power increases with decreasing the refractive index of the liquid.

References

- [1] D. A. Krohn, "Fibre Optic Sensors – Fundamentals and Applications", Instrument Society of America, 1988.
- [2] R. S. Medlock, "Fibre Optic Intensity Modulated Sensors" in "Optical Fibre Sensors", Ed. By A. N. Chester, S. Martelluci and A. M. Verga Scheggi, Martinus Nijhoff, Dordrecht, 1987.
- [3] G. D. Pitt, Extance P., Neat R. C., Batchelder D. N., Jones R. E. Barnett J. A. and Pratt R. H., "Optical Fibre Sensor", Proc. IEE 132, pt. J., pp. 214–214, 1985.
- [4] C. M. Davis, Carome E. E., Weik M. H., Ezekiel S. and Einzig R. E., "Fibre Optic Sensors Technology Handbook", Dynamic Systems Inc., Virginia, 1982.
- [5] W. B. Spillman and McMohan D. H., "Schlieren Multimode Fibre Optic Hydrophone", App. Phys. Letts. 37, pp. 145–147, 1980.
- [6] M. Priyamvade and Pal B.P., Internal Study on "Fabrication of Fused Y-Coupler", IIT Delhi (1989).
- [7] C.R. Tallman, Wingate F.P. and Ballard E.O., "Fibre Optic Coupled Pressure Transducer", ISA Trans. 19, 49-51 (1980).
- [8] S. Uena, "New Method of Detecting Surface Texture by Fibre Optics", Bull. Japan Soc. Of Prec. Engg. 7, 87-90 (1973).
- [9] H. Matsumoto, Saegusa M., Saito K. and Mizoi K., "The Development of a Fibre-Optic Catheter-tip Pressure Transducer", J.Med. Engg. Tech. 2, 239-242 (1978).
- [10] S. Uena, Shibata N. and Tsujiuchi J., "Flexible Coherent Optical Probe for Vibration Measurements", Ppt. Commn. 23, 407-410 (1977).
- [11] A.L. Harmer, "Optic Fibre Sensors", A Survey Report prepared by Battele-Geneva Research Centre, Switzerland.
- [12] K. Kyuma, Tai S., Hamanaka K. and Nuhoshita M., "Laser Doppler Velocimeter with a Novel Fibre Optic Probe", App. Opt. 20, 2424-2428 (1981).
- [13] F. Parmigiani, "A High Sensitivity Laser Vibration Meter Using a Fibre-Optic Probe", Opt. Quant. Electron. 10, 533-537 (1978).
- [14] L.H. Lindstrpem, "Miniaturised Pressure Transducer Intended for Intravascular Use", IEEE Trans. On Bio-medic. Engg. BME-17, 207-219 (1970).
- [15] K. Oki, Akehata T. and Shiarai T., "A New Method of Evaluating the Size of Moving Particles with a Fibre Optic Probe", Powder Tech. 11, 51-54 (1975).
- [16] S. Sheem and Cole J., "Acoustic sensitivity of single-mode optical fibre power divider", Opt. Letts. 4, 322-326 (1979).
- [17] M.A. Nokes, Hill B.C. and Barelli A.E., "Fibre Optic Heterodyne Interferometer for Vibration Measurements in Biological Systems", Rev. Sc. Instrum. 49, 722-728 (1978).
- [18] S.Ramakrishna, "Multimode Optical Fibre Sensors", J.I.E.T.E. (India) 32, 307-310 (1986).
- [19] S.Ramakrishna and R. Th. Kersten, "Faseroptic Sensor mit Uberwachungsmoglichkeiten", German Patent P. 3415242 (1984).
- [20] S.Ramakrishna and R. Th. Kersten, "A multipurpose cross-talk sensor using multimode fibres", Proc. 2nd Opt. Fibre Sensor Conf., Stuttgart, 105-110 (1984).
- [21] S.Ramakrishna and R. Th. Kersten, "Faseroptische Wasserwaage", German patent P. 3236436 (1982).

A Study On Recruitment And Selection Process Of Hindusthan National Glass & Industries Ltd. & Emerging Trends In Recruitment And Selection

KOMAL*

PUSHPA**

Abstract

Human resources are most important part of success of any organisation. Without humans others factors of production are useless. Because humans are wealth of the company. The Recruitment and Selection process is one of paramount importance for employing right person at the right place. This paper actually focuses on the recruitment and selection process followed by parle products pvt. Ltd. In bahadurgarh (hr.). This paper study about the satisfaction level of employees of HNG Company. The review of literature is mainly based upon various authors' point of view on recruitment and selection process. Data is collected through sample design. Interpretations are done through percentage method. The last section of this paper focuses on the emerging trends in recruitment and selection process and how the process of recruitment and selection of HNG Company can be improved by applying these trends.

Keywords: Human Resources, Recruitment, Selection, Recruitment Policy, Trends etc.

INTRODUCTION

Recruitment is the first step in employment process. Then after this selection and placement comes. These are the major human resource activity. Recruitment process is different in different organisations. Recruitment is mainly based on the size of the company. Through Recruitment, significant pool of candidates is chosen. However, achieving a satisfactory pool of candidates is not an easy task. One has to go through a lengthy process. The first goal of recruiting is to collect more and more applications, the more applications received, the recruiter has a more chances for finding an individual who is best suited for the job.

According to Flippo, "Recruitment is the process of searching for prospective employees and stimulating and encouraging them to apply for jobs in the organisations."

Generally recruitment starts with job analysis and ending with collecting pool of candidates. Recruitment has two methods-

- **Internal sources**
- **External sources**

Internal sources mainly include recommendation, promotion, demotion, transfer, previous applicants etc. External sources include advertisements, employment exchange, unsolicited applicants, professional's organisations, trade unions, campus recruitment etc.

Selection is the second step in the process of employment.

* ASSISTANT PROFESSOR OF COMMERECE, VAKM,BAHADURGARH, HARYANA

** ASSISTANT PROFESSOR OF COMMERECE, VAKM,BAHADURGARH, HARYANA

According to Dale Yoder," Selection is the process in which candidates for employment are divided into two classes – those who are to be offered employment and those who are not.

Selection process will be lengthy for large organisations and will be wider for manufacturing organisations and it differs from one industry to another. (Venkatesh, 2008). Generally selection process starts with preliminary interview and ending with contract of employment.

Literature Review

According to the Burack (1985) recruitment sources are closely linked to the organisational activities as performance of employees, employee turnover, employee satisfaction, employee wishes and the commitment of the organisation (Burack, 1980). These recruitment and selection process should be done at each and every sector for fulfilling their organisational goals (Nartey, 2012}. Recruitment and selection practices were important in the police department as said by Michael D.White and Glipsy Escobar (2008) in the world and this paper shows the importance of seven issues relating to recruitment , selection and training practices in the organisations (M.N.Malhotra, 2014) (Terpstra.D, 1996). Mohammed Nurul Absar (2012) says the importance of recruitment and selection in his paper by considering both public and private manufacturing firms in Bangladesh (M.M. Absar, 2012). Some of the research professionals and scholars say that there is a close linkage between the recruitment, selection, employee satisfaction, organisational performance and HR practices (Gorter, 1996). In his paper Recruitment and Selection of public workers: An international compendium of modern trends and practices say that the importance of using technology in the recruitment and selection process for updating the organisational resources (Hays, 2004). Price (2007), in his work Human Resource Management in a Business Context, formally defines recruitment and selection as the process of retrieving and attracting able applications for the purpose of employment. He states that the process of recruitment is not a simple selection process, while it needs management decision making and broad planning in order to appoint the most appropriate manpower.

Ongori Henry and Temtime Z (2009) say that in their paper the Recruitment and Selection practices of the small and medium enterprises and make them to improve their HR practices (R.D.Omolo, 2012). Any management process revolves around recruitment and failure in recruitment may lead to difficulties and unwanted barriers for any company, including untoward effects on its profitability and inappropriate degrees of staffing or employee skills (Jones et al. 2006).Among recruitment sources Bernardin say that internal source of recruitment is effective compared to the external source (H.John, 2003). However, the process of recruitment does not cease with application of candidature and selection of the appropriate candidates, but involves sustaining and retaining the employees that are selected, as stated by Silzer et al. (2010).Decker & Cornelius say that compared to the traditional recruiting sources the modern sources like referrals, casual applicants and direct approaches will benefit at large (L.Barclay, 1985) (Cappelli, 2001). Selection procedure also should be in application to the modern techniques (M.Smith, 2001). The literature says that employers are doing the traditional method of recruiting than the modern technologies (Schmidit, 1998). Toward that end Taher et al. (2000) carried out a study to critique the value-added and non-value activities in a recruitment and selection process. The strategic manpower planning of a company, training and development

programme, performance appraisal, reward system and industrial relations, was also appropriately outlined in the study.

According to the Burack (1985) recruitment sources are closely linked to the organizational Activities as performance of employees, employee turnover, employee satisfaction, employee wishes and the commitment of the organization (Burack, 1980). These recruitment and Selection process should be done at each and every sector for fulfilling their organizational Goals (Nartey, 2012). Recruitment and selection practises were important in the police Department as said by Michael D. White and Glipsy Escobar (2008) in the world and this paper shows the importance of seven issues relating to recruitment, selection and training Practises in the organizations (M.N.Malhotra, 2014) (Terpstra.D, 1996). Mohammed Nurul Absar (2012) says the importance of recruitment and selection in his paper by considering both public and private manufacturing firms in Bangladesh (M.M.Absar, 2012). Some of the Research professionals and scholars say that there is a close linkage between the recruitment Selection employee satisfaction organization performance and HR practises (Gorter, 1996). In his paper Recruitment and Selection of public workers: An international compendium of Modern trends and practises say that the importance of using technology in the recruitment and selection process for updating the organizational resources (Hays, 2004). Ongori Henry and Temtime Z .According to the Burack (1985) recruitment sources are closely linked to the organizational Activities as performance of employees, employee turnover, employee satisfaction, employee wishes and the commitment of the organization (Burack, 1980). These recruitment and Selection process should be done at each and every sector for fulfilling their organizational goals (Nartey, 2012). Recruitment and selection practises were important in the police Department as said by Michael D. White and Glipsy Escobar (2008) in the world and this paper shows the importance of seven issues relating to recruitment, selection and training Practises in the organizations (M.N.Malhotra, 2014) (Terpstra.D, 1996).

Objectives Of The Study

- To study and analyze the recruitment and selection process at HNG Ltd.
- To analyze the satisfactory level of employees working in HNG plant.
- To study the emerging trends in recruitment and selection.
- To suggest some new methods to improve the recruitment and selection process of HNG Ltd.

Research Design

It means the methods and procedure used for collecting data or information. The study has employed survey method of research.

Data Sources and Collection

The secondary data is drawn from research journals, books, internet and magazines. The primary data- recruitment and selection process followed by HNG Ltd. – are collected from employees in this organisation with the help of Questionnaire. The HND LTD. Has 400 employess out of 400 employees sample size has been taken as 80 with the help of convenience sampling method. But the filled questionnaire received from the respondents is 40.

Sampling

Convenience method of sampling was adapted. The population for study was HNG Company in Bahadurgarh (Haryana). A sample of 50 was taken.

Data Analysis

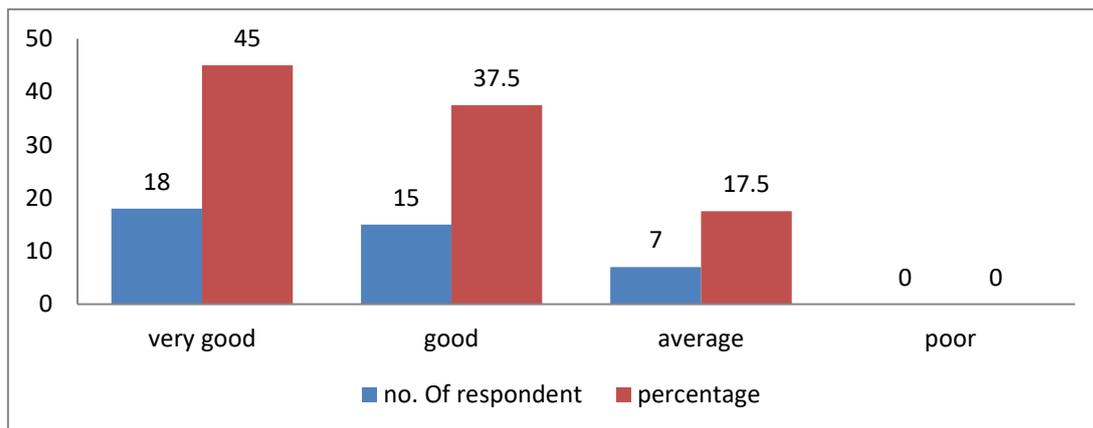
Data are presented in simple percentages form through tables and pie chart.

Limitations Of The Study

- Sampling method is used so may be the result was not absolute.
- Biasness on the part of employees may be involved while filling questionnaire.
- Busy schedules of employees were also a limitation.
- Collecting data from employees may be difficult due to time constraint.
- Employee's non willingness to involve in the survey.

Analysis of opinion on Recruitment and Selection process of the organisation

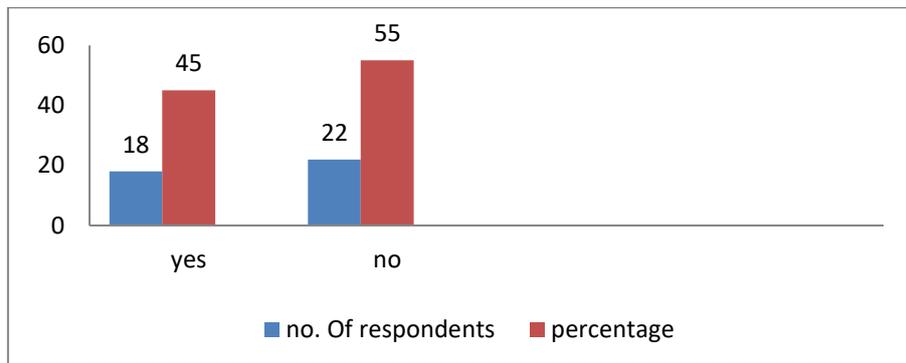
particulars	No. Of respondents	percentage
Very good	18	45
Good	15	37.5
Average	07	17.5
Poor	00	00
total	40	100



Interpretation: The survey depicts that less than 50% of employees' opinion is good about recruitment and selection process of the organisation and more than 50% of employees' opinion is very good and average.

Analysis of opinion on modification of Recruitment Policy

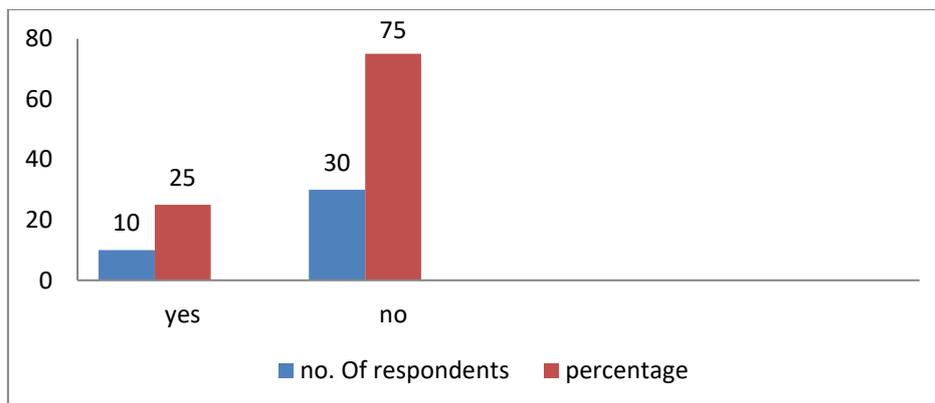
particulars	No. Of respondents	Percentage
Yes	18	45
No	22	55
Total	40	100



Interpretation: as we can see that 55% of employees of the organisation don't want to modify the recruitment policy and 45% of employees want to modify the recruitment and selection policy.

Analysis of opinion on favouritism at the time of selection

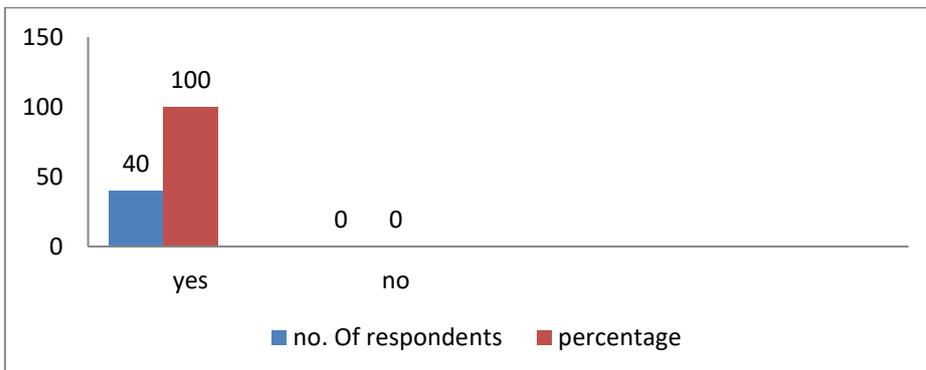
particulars	No. Of respondents	Percentage
Yes	10	25
No	30	75
total	40	100



Interpretation: from the survey it can be seen that 25 % of the employees said that there is a choice of favouritism at the time of selection and 75% of the employees said that there is no favouritism at the time of selection.

Analysis of satisfaction of Recruitment procedure in the organisation

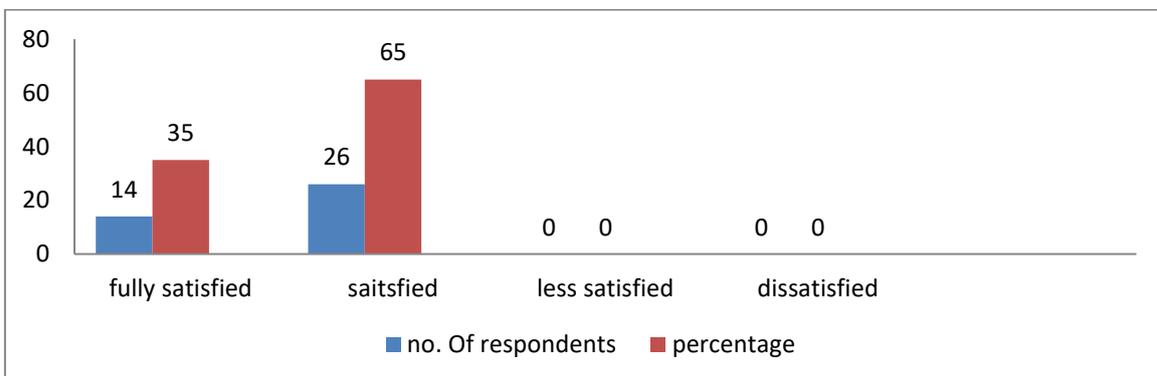
particulars	No. Of respondents	Percentage
Yes	40	100
No	00	00
total	40	10



Interpretation: 100% of the respondents said that they are satisfied with the recruitment procedure of the organisation.

Analysis of satisfaction of Selection process

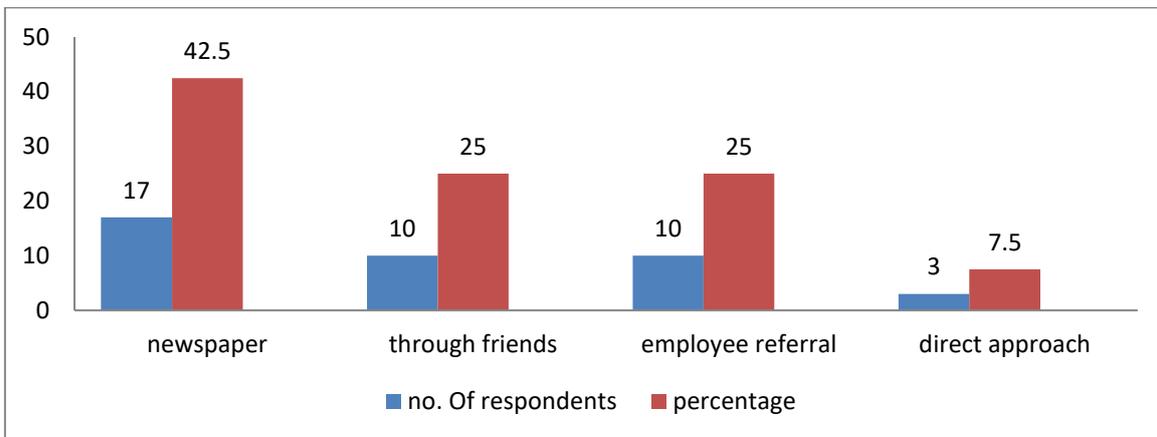
particulars	No. Of respondents	Percentage
Fully satisfied	14	35
Satisfied	26	65
Less satisfied	00	00
Dissatisfied	00	00
Total	40	100



Interpretation: The survey depicts that 65% of the respondents were satisfied with the selection process of the organisation but 35% were fully satisfied with the selection process.

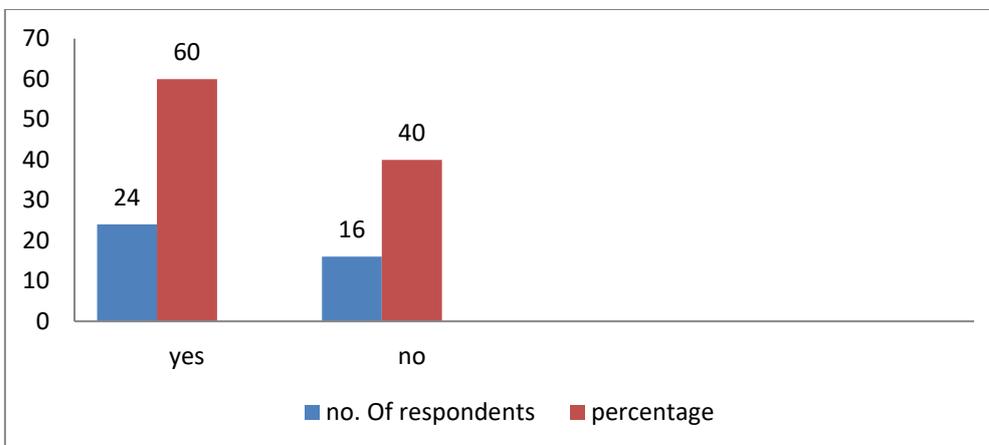
Analysis to know about the job vacancy in the organisation

particulars	No. Of respondents	Percentage
Newspaper	17	42.5
Through friends	10	25
Employee referral	10	25
Direct approach	03	7.5
Total	40	100



Interpretation: The survey depicts that 42.5% were know the vacancies through newspaper. 25% knew the vacancies through friends. 25% were joined the company through employee referral and remaining 7.5% were approached to the company directly. Analysis to have any work experience before appointment in the organisation

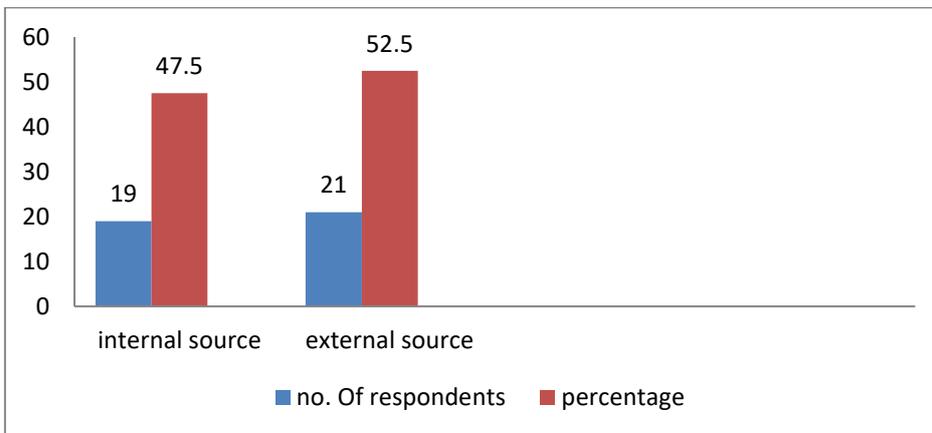
particulars	No. Of respondents	percentage
Yes	24	60
No	16	40
total	40	100



Interpretation: The survey depicts that 60% of the respondents have work experience while remaining 40% have no work experience.

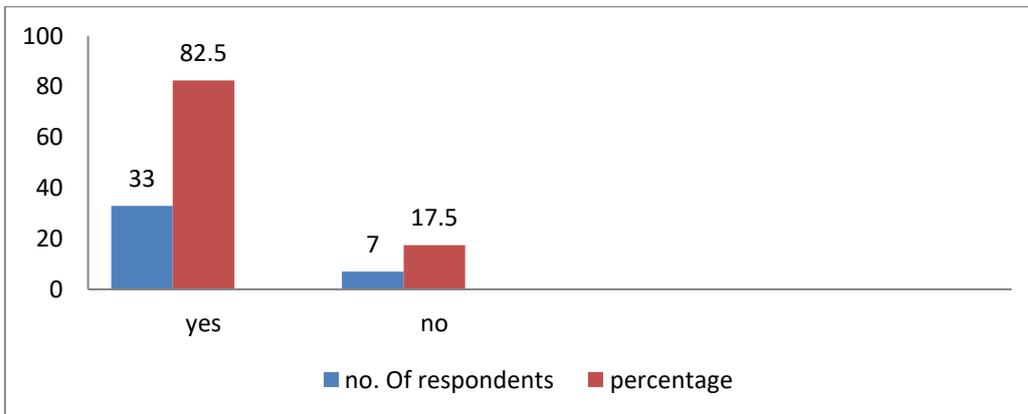
Analysis of best source of recruitment for the organisation

particulars	No. Of respondents	Percentage
Internal source	19	47.5
External source	21	52.5
Total	40	100



Interpretation: The survey depicts that approx 52% of respondents were said that external source is the best for recruitment while approx 47% said internal source is the best source. Analysis of transparency of recruitment process

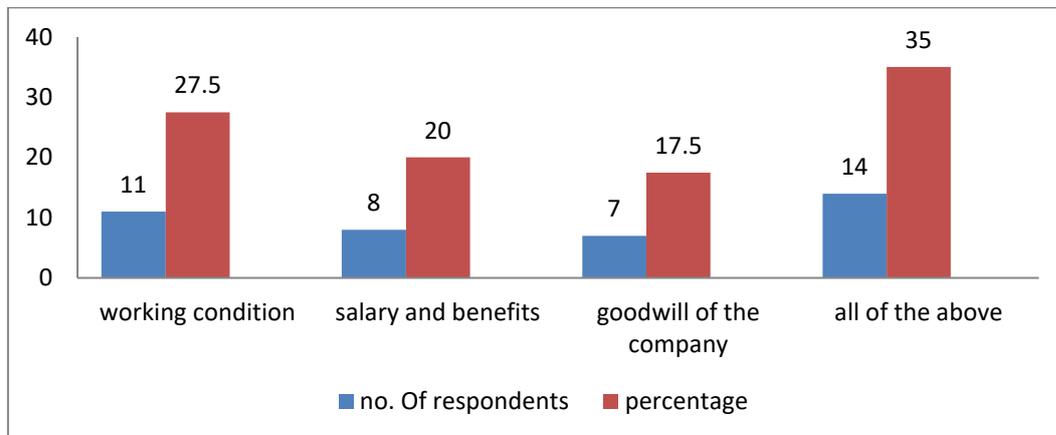
particulars	No. Of respondents	Percentage
Yes	33	82.5
No	07	17.5
Total	40	100



Interpretation: 82.5% of respondents said that the recruitment process has transparency while remaining 17.5% said there is no transparency.

Analysis of stimulating conditions to apply for the job

particulars	No. Of respondents	Percentage
Working condition	11	27.5
Salary and benefits	08	20
Goodwill of the company	07	17.5
All of the above	14	35
Total	40	100



Interpretation: the survey depicts that 27.5% of the respondents stimulated by working conditions and 20% of them were stimulated by salary and benefits and 17.5% apply due to goodwill of the company while remaining 35% apply due to all the 3 factors.

Conclusion

The study was conducted on the employees of HNG LTD. By taking sample of 80 out of which respondents are 40. The research showed that most of the employees in the company were satisfied with the recruitment and selection process. The recruitment department is well enough for recruiting best person at the best place. But environment is changing so company must change its recruitment policy according to the dynamic environment. Some suggestion were mentioned to enhance the recruit] ment strategies, policies, procedures etc.

Suggestions

- Company can attract more and more applicants by organising job fairs, through educational institutions, employment agencies etc.
- Company can follow new techniques and methods of selection emerging in this area.
- The recruitment team must be well qualified and well experienced because only this team will ensure the right person at the right job.
- The company should take reviews from the employees about the satisfaction levels of employees regarding job conditions twice in a year.
- The company must form a counselling committee to ensure the mental state of the employees.

Future scope of the study

The study was based only on the recruitment and selection process of HNG LTD. But there is scope of study of various other HR practices in this company and other manufacturing and trading industries. Researchers can make comparisons between the recruitment and selection process of various industries. Some may highlight the campus recruitment process, quality of recruitments done earlier, study on lead time taken to fill the vacancies and methods to reduce the lead time.

References

Burack EH. Human Resource Planning, 1980.

Armstrong CP. Current Recruitment and Selection Practices: A National Survey of Fortune 1000 Firms. North American Journal of Psychology 2006; 489-496.

Bhattacharyya DK. Human Resource Management. New Delhi: Excel Books, 2010.

Gorter CN. Employers' recruitment behaviour and vacancy duration: an empirical analysis for the Dutch Labor Market. Applied Economies 1996; 1463-1474.

Gusdorf ML. Recruitment and Selection: Hiring the Right Person. USA: Society for Human Resource Management, 2008.

Terpstra D. Recruitment and Selection: The Search for Effective Methods. HR focus 1996; 16-18.

Thornh MS. Research Methods for Business students. Upper Sadle River: Prentice Hall, 2003.

Venkatesh P. Human Resource Management. New Delhi: Oxford University Press, 2008.

The recruitment and selection process, the international journal of management research and review.

Dr. Ravindranath Badi Human Resource Management. Himalaya Publishing House, 2011.

A Study On Work Life Balance Among The Women Employees In Information Technology Industry.

Dr. M. Sudarshan Reddy*

Abstract

This paper aims at examining the work life balance among the employees in Information Technology sector. This study adopts descriptive research design involving random sampling procedure. Primary data was collected using Questionnaire method. The sample size was 120 comprising 60 married and 60 unmarried respondents and the variables examined were occupational stress and work life imbalance practices. The statistical tools applied were Standard Deviation, ANOVA and t-Test. The results indicated that there is significant difference among the employees in perception level towards work life balance.

Keywords: Work Life Balance, IT.

Introduction

Work is widely viewed as a source of personal satisfaction. A good balance in work and life can play a phenomenal role in the attainment of personal and professional goals. There is a view that work-life balance only in the framework of what the company does for the individual. However, work-life balance is a two-pronged approach. The other prong of work-life balance, which many individuals overlook, relates to what individuals do for themselves. The core of work life balance could also be summed as achievement with enjoyment. In the cut-throat competitive environment, the organization's expectations from the employees are increasing. In order to meet the employer's demand, the employees have to stretch themselves and focus more on their work which is creating work-life imbalance. In fact striking a balance between work-life and personal life is one of the most challenging issues being faced by the employees in the 21st century. It is said that many employees working in various sectors are having a disturbed work-life balance leading to increasing number of divorces, strained relationships among the family members, conflicts in the organizations and suicides.

The issue of work-life balance has become the hot topic in the current day scenario. Ines Hardoy, Pal Schone (2006)¹, emphasized that changes in technology, values and demographic trends contributed to the emergent relevance of work-life balance in industrialized societies. It is supplemented by other factors which include increasing complexity of work, change in nature of family and the extended number of entering the workforce. Work-life balance refers to the divergence between the work place demands and the demands of personal life. When either side becomes unbalanced for extended periods of time, the effect is likely to be visible in unhealthy symptoms (fatigue, stress, depression, etc.).

* Sr. Lecturer, Sree Vedavyasa Dr. College, Proddatur, Andhra Pradesh.

A lack of synchronization between domestic life and work life causes great personal and financial hardship, both to the individual and the company. In the competitive era, organizations are under competitive pressure to achieve high productivity and require employees with healthy work-life balance as an employee with good work-life balance will be in a position to contribute more towards the organizational growth and success (Naithani, 2010)². Therefore it is a high time for employers to draw out strategies and help the employees to enjoy their work and live life to the fullest.

Review Of Literature

Work-life balance term is defined as the time an employee spend on both at work as well as socializes with family, friends and attending to other personal interests (K. T. Smith, 2010)³. Individuals are now exposed to the idea of work-life balance in order to achieve the total satisfaction in life, apart from being happy or performing well at work. The work-life balance or family-friendly work policies are found to be as one of the basic needs for every working adult especially in this era.

A case study by Mazerolle and Goodman, (2013)⁴ on athletic trainers' view on work-life balance policies is found to be encouraging in terms of shared goals between professionalism as well as the personal.

Another policy which an organisation is able to introduce is changing from full-time to part-time employment. A research conducted on the part-time work arrangement had shown that employees are volunteering to opt to this type of employment and also accepting lower compensation (M. D. Lee, S. M. MacDermid, and M. L. Buck , 2000)⁵. The result also noted that the outcome is generally positive in terms of productivity and company image, recruitment and retention program, as well as able to respond and adapt quickly in the current need in the labour market.

The introduction of flexible working time in Germany has found that it has allowed them a great opportunity to have and enjoy their private lives. Zulch, Stock and Schmidt (2012)⁶ have discovered on different types of employees with flexible working-time preferences according to individual need. The majority of respondents were female, thus they are able to cluster it into few groups such as part-time employee with elderly care, part-time employee who is still in school, and working mother with children. All in all, the introduction of this program is to encourage employees to decide on their work time arrangement in order to fit into their current need.

It is highlighted in Brough and O'Driscoll (2010)⁷ article on the work-life balance intervention in the organisation whereby compressed work week or flexible work hours has been implemented since in the early 1980s as it allows the Journal of Economics, Business and Management, Vol. 5, No. 1, January 2017 19 individuals to spend more time for family and leisure as well as to make certain on their family needs and value is taken care of. Apart from the flexible working time, the leisure time program is also introduced by Tabarsa, Tehrani, Loftfi, Ahadian, Baniyasi and Tabarsa (2013)⁸ where an employee could spend a period of time other than his or her usual job scope for non-work related activities.

The other non-work related is the child and eldercare responsibility, where the demand especially in terms of time, could affect the work-life balance especially for those who are with young children and elderly parents (J. Hayman and E. Rasmussen ,2013)⁹. The research concluded that the importance on having childcare support (i.e. time) especially is

needed for parents with young children in order to ensure they provide with the necessary attention and care.

From the perspective of the organisation, the work-life balance benefits (the consequences of work-life balance implementation) are reduce absenteeism and turnover, improve productivity and image, and ensuring retention and loyalty whereas in the eye of employees, the work-life balance benefits are inclusive of improving health, autonomy and stress reduction (N. K. Chimote, and V. N. Srivastava ,2013)¹⁰. The result of the relationship is negative which shows that the perspective of an organisation and employees is a challenging to impose every single need for both sides. The organisation needs to work hand in hand with its employees in order to fulfill the basic requirements from both as well as to ensure that the implementation would satisfy both parties.

Objectives

1. To compare the perception levels of married and unmarried employees in IT industry on Work Life Balance.
2. To suggest certain measures for improving the Work Life Balance among the employees in IT industry.

Hypothesis

H_{a1} : There is a significant difference in the perception level on Work Life Balance among the married and unmarried employees of IT industry.

Research Methodology

The present study adopts descriptive Research Design. Random Sampling method was applied to collect the data from the sample. Questionnaire method was employed in order to collect the primary data and it possess a 5-point Likert Scale method. The sample consists of both unmarried and married women employees from both managerial and executive cadres. The sample size is 120 and it contains 60 respondents from the married category and 60 respondents from the unmarried category. The variables examined were occupational stress and work life imbalance practices containing 12 dimensions based on the marital status. The study area comprises of the IT sector in Hyderabad Region of Telangana State.

The statistical tools applied for the data analysis were Standard Deviation, ANOVA and t-Test.

Analysis And Findings

Table-1: Rating of Work Life Balance Issues

Sl.No	Variables	Mean	S.D
1	My work load exceeds for more than 11 hours per day	2.82	0.845
2	My job involves multi role play in a given period	3.16	1.517
3	My job often makes my family to suffer	2.78	1.682
4	My job and family roles deter me to attend social activities	2.91	1.521
5	My family obligations makes me fatigued to look after my job activities	2.65	1.439
6	Sacrificing much of my family roles made me to become a successful person in my profession	2.74	1.895
7	Heavy work load and lack of time are the	2.88	1.769

	reasons to me for not able to give proper attention to my job and family duties		
8	I am not able to take care of my health due to lack of time and family and job roles	2.77	1.137
9	My Role conflicts in job and family put me to a lot of stress	2.95	1.729
10	It is difficult for me to balance job and family roles simultaneously	2.54	1.419
11	Imbalance in my job and family roles makes me to feel irritated and angry with my colleagues and family members	2.88	1.785
12	Heavy work load in the job makes me to avoid the spending of evenings and weekends with my family members	2.73	1.397

The above table shows the examination of variables like work life imbalance factors (8) and occupational stress factors (4). It shows the rating of work life balance issues by basing on the perceptual statements given by the sample respondents. The scaling technique applied was a 5-point Likert scale ranging from 1(Strongly Disagree) to 5 (Strongly agree). The variable with serial number 2 has the highest mean value of 3.16 with a standard deviation of 1.517 and the variable with serial number 10 has the lowest mean value of 2.54 with a standard deviation of 1.419.

Table No.2: ANOVA (Single factor Analysis) Summary

Groups	Count	Sum	Average	Variance
Married	60	8975	159.32	5793.85
Unmarried	60	7429	137.47	6547.78

ANOVA

Source of Variation	SS	Df	MS	F	P-value	F. Crit
Between Groups	15731	1	15731	3.007241	0.08315	5.1628
With in Groups	43.330847	118	5231.04			
Total	15775.330847	119				

The above table shows the perceptions of the sample respondents regarding work life balance based on their marital status. It shows that people belonging to different marital status had differed significantly in their perceptions with regard to work life balance (F- marital status =3.007241, p <0.001).

Verification of Hypothesis (H_{a1})

Table No.3: t-test (Two Sample Assuming Unequal Variance)

	Married	Unmarried
Mean	159.24	138.42
Variance	4564.32	5321.59
Observations	60	60
Hypothesized Mean Difference	0	0
df	118	
t- stat	1.8362	

P(T<=t) one-tail	0.0412
t critical one-tail	1.7394
P(T<=t) two-tail	0.0864
t critical two-tail	2.1538

The above t-test shows that married and un married category of respondents differed significantly in terms of their perceptions towards work life balance issues. (p value <0.001). Hence the above alternate hypothesis is accepted stating that there is difference in the perception of married and unmarried respondents of IT sector towards work life balance.

Conclusion

From the above data analysis and interpretation it is clear that job stress and work life imbalance are obvious in the present life style. The above study states that work life balance is effected by the marital status of the employees and if the intervening factors like job stress and other imbalance social factors are reduced , the positive status-quo of work life balance can be maintained to a greater extent.

The employees in an organization are the main factors of organizational productivity and hence in order to increase the productivity, the organizations should focus on their employees and they should provide all the amenities to their work force in order to maintain the physical and psychological vigor and vitality. They should promote employer –employee and employee-employee relations in their organizations and effective organizational climate shall prevail in order to combat day to day challenges in the business environment. Thus a sociological approach is the need of the hour promoting work life balance among the employees in the IT sector.

Suggestions

In the light of the above findings and conclusion the following suggestions were made in order to improve the work life balance among the women employees in IT sector.

- Effective counseling programmes to the employees should be given in order to handle job stress and family pressures.
- The employees should adopt and adapt the habits of self discipline , highly organized and meticulous planning and socially sensitive to their family obligations.
- The employees should inculcate good health practices and they should cultivate good habits which enhance the positive approach towards life and reduces the job and family related stress.

References

1. Ines Hardoy, Pal Schone (2006), The Part-Time Wage Gap in Norway: How Large is It Really? British Journal of Industrial Relations, London, Vol. 44, No. 2; pp. 263.
2. Naithani, P (2010), Overview of Work-life balance discourse and its relevance in current economic scenario. Asian Social Science, Vol. no. 6(6), pp.148-155.
3. K. T. Smith, "Work-life balance perspectives of marketing professionals in generation Y," Services Marketing Quarterly, vol. 31, pp. 434-447, 2010.
4. S. M. Mazerolle and A. Goodman, "Fulfillment of work-life balance from the organizational perspective: A case study," Journal of Athletic Training, vol. 48, no. 5, pp. 668-677, 2013.
5. M. D. Lee, S. M. MacDermid, and M. L. Buck, "Organizational paradigms of reduced work-load: Accomodation, elaboration, and transformation," Academy of Management Journal, vol. 43, no. 6, pp. 1211-1226, 2000.

6. G. Zulch, P. Stock, and D. Schmidt, "Analysis of the strain on employees in the retail sector considering work-life balance," IOS Press, vol. 41, pp. 2675-2682, 2012.
7. P. Brough and M. P. O'Driscoll, "Organizational interventions for balancing work and home demands: An overview," Work & Stress, vol. 24, no. 3, pp. 280-297, 2010.
8. G. A. Tabarsa, M. Tehrani, N. Loftfi et al., "Leisure time management: A new approach toward employees loyalty," Journal of Management and Strategy, vol. 4, no. 3, pp. 65-80, 2013.
9. J. Hayman and E. Rasmussen, "Gender, caring, part time employment and work/life balance," Employment Relations Record, vol. 13, no. 1, pp. 45-58, 2013.
10. N. K. Chimote, and V. N. Srivastava, "Work-life balance benefits: From the perspective of organizations and employees," The IUP Journal of Management Research, vol. 12, no. 1, 2013