RVIM JOURNAL OF MANAGEMENT RESEARCH

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RVIM JOURNAL OF MANAGEMENT RESEARCH

A STUDY ON MANAGERIAL RESOURCEFULNESS AND FACTORS DETERMINING PERFORMANCE OF FUND MANAGERS

Dr. Uma Maheswari .S *

Abstract:

This study explores the managerial resourcefulness of fund managers and factors determining the performance of fund managers. In addition, study also understands the impact of demographic variables on managerial resourcefulness and factors determining performance of fund managers. The sample unit of the study was Managers dealing with Mutual fund Inc. The sample size of the study was 103 which are collected from Fund Managers which includes (chief investment officer, fund manager and investment advisors). Data collections were largely covered companies located in Bangalore and Mumbai. The study used factor analysis, to explore the variables which determine the performance of fund managers. Apart from that one way ANOVA analysis was used for the study to prove the statistically significant differences among the four dimensions of managerial resourcefulness and factors determining performance across demographic variables of fund managers. The result of the study proved that there is a statistically significant difference among managerial resourcefulness, factors determining performance of fund managers and demographic variables of fund managers.

Key words: *Fund Managers, Managerial Resourcefulness and Factors determining Performance of Fund Managers.*

1. Introduction:

In the stock market, Small and medium investors face various problems while investing in the share market. The Investors have lack of awareness in accessing the day to day activities of sensitive information about the stock exchange and market volatility. These types of investors do not know about the risk and return of their limited sources of investment. Fund Manager is play inevitable role between investors and mutual fund industry. This study has attempted to asses managerial resourcefulness of fund managers and factors which are determining performance of fund managers among demographic variables of fund managers. The managerial ability of fund managers such as experience, expertise in fund selection, awareness of present market condition, and Industry dynamism etc. All these factors are highly supported by various literatures, **Nicolas P.B. Bollen and Jefferey .A Busse's Timing ability, Bruce A Costa and Gary.E. Porter's**

Tenure, Aron A. Gottesman, Mathew R. Morey's Education, and Ding Du Zhoadan Huang and peter Blanch field Managers' skill. Therefore, fund manager enacting as intermediaries between investors and mutual fund industry.

1.1 Mutual Fund:

A Mutual Fund is a trust pools the savings of number of investors who share a common financial goal. The money thus collected is then invested in capital market instruments such as shares debentures and other securities. The income earned through these investments and the capital realized appreciations are shared by the unit holders in proportion to the number of units owned by them. Thus a mutual fund is a most suitable investment for the common man to provide an opportunity to invest in a diversified, professionally managed basket of securities at a relatively low cost.

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1.2 Investment process of Mutual Fund:
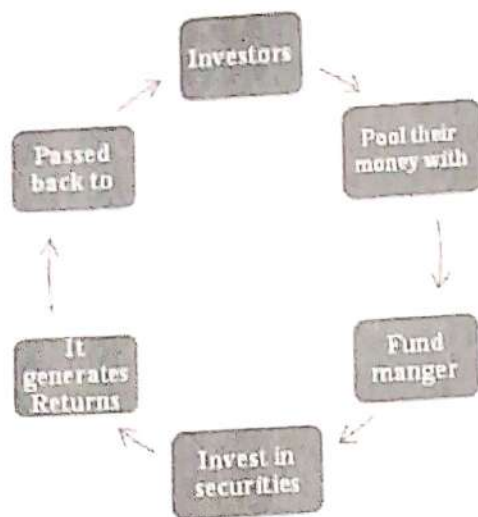
Sources: www.amfi.com

1.3 Fund Manager:

Fund Managers are experts who have their pulse on the market and decide on the right pick of stocks, debentures, debt instruments, government securities among others to maximize gains on your investment. In the Asset under Management Company, a fund manager is act as vital role between organization and investors.

SEBI vides its notification dated 5th July 2006 has amended the SEBI (Portfolio Managers) Regulations, 1993. The amendments permit appointment of a person with an experience of at least ten years in related activities in the securities market including in a portfolio manager, stock broker or as a fund manager as principal officer and also provide for compulsory appointment of custodian in respect of securities maintained by it.

2. Review of Literature:

2.1 Fund Manager Performance:

Morningstar Principia, 2006, According to Morningstar's description about fund manager "Fund Management is important variable in fund performance. Fund Manager is most helpful in light of corresponding manager tenure. For the improvement of new managers arrivals correlated with the past record performance of fund managers for fund management"

James Philpot, Douglas Hearth, and James Rimbey, 2000, In their study examined the management skill in managing nonconventional bonds mutual fund, defined speculative grade, global or conventional bond mutual fund, using a performance persistence and performance–related variables approach. The study explained that the relative performance persistence is best at short-term time tenure of fund managers than of long term tenure.

Nicolas P.B. Bollen and Jefferey .A Busse's 2001, studies denoted that 'on timing ability of Mutual Fund Mangers' and result of their study determined that daily data provide different inferences than monthly data regarding timing ability. These daily data inferences motivate the future test of Mutual fund performance and extend the size of Funds with effective performance of Fund Managers

Rich Fortin, Stuart Michelson, and James Jordan Wagner, 1999 August contributed their research article towards analyzes about relationship between Mutual fund Manager long term tenure and fund performance. In their research results demonstrate that Investors should look beyond manager tenure and consider other investments variables affecting performance, such as consistency of return on investment objective, turnover, expenses ratio and fund size.

Bruce A Costa and Gary E. Porter 2006 examined the relationship between fund mangers tenure (at least 10 years experience) and performance i.e. Positive risk adjusted return on funds. But the result of their study determined that there is no relationship between tenure and fund performance of managers' .Even the three years experience of mutual fund managers preformed positive return on funds

Ding Du Zhoadan Huang and peter Blanch field, their study referred that fund manager does have managerial skill with the evidence of Bond mutual fund managers performance. Their research study denoted that Managerial skills of Mutual fund essential for fund performance. But in long period their quiet weak in mutual fund industry .They measured the managerial skill and fund managers' performance, and show the result that is positive correlation between Managerial skill and Bond Mutual Fund mangers performance.

Aron A. Gottesman, Mathew R. Morey, 2006 Examined about the relationship between manager education and mutual fund performance, Suggestions of their results are informative for investors, future mangers, and companies. Knowledge acquired in top or near top MBA programs may enhance the manager's ability to identify performance-enhancing inefficiencies in the market. For students or individuals interested in pursuing graduate education in order to obtain fund management knowledge obtain MBA from a top or near top program is worthwhile. A fund that wishes to maximize its expected performance should hire managers from top or near top MBA programs.

According to Pollet et al. 2008, extend this Strand of the literature by displaying the relationship between expected fund performance and managerial ownership. As outlined in the article, managerial ownership has a positive impact on the interests of fund Shareholders and a change in ownership structure can lead to an increase in firm value. In this respect, we argue that managers themselves have superior information about future fund performance and that a larger stake holding would be a good sign of higher returns to be produced.

Kosowski et al. (2008) examine the impact of Stock-selection skill on mutual fund performance by implementing various bootstraps strategies for monthly fund returns using a number of conditional and unconditional performance models.

Determined about that superior/poor performance of the US fund managers are not entirely by luck.

Melih ALP, 2009: Managers' success is greatly dependent on the dominant market conditions and selected benchmarks because managers may underperform their peers in the presence of mismatched benchmarks and adverse market conditions even if they possess significantly positive managerial abilities. The latest research shows that superior skills of managers have been in decline since 1990s

2.2 Managerial competencies:

Dr.Yasin Olum, 2004:

Managers also supervise, management can be interpreted to mean literally "looking over" – i.e., making sure people do what they are supposed to do. In his study, goal of managers determined that, the logical and publicly desirable aim of all managers in all kinds of organizations, whether business or non-business, should be a surplus. Thus, managers must establish an environment in which people can a accomplish group goals with the least amount of time, money, materials, and personal dissatisfaction or in which they can achieve as much as possible of a desired goal with available resources.

Yufeng Han et al. 2008:

This research study examined the relationship between the team management of mutual funds, fund manager ability, fund performance and holdings. In the analysis, whether there is relationship between the team management mutual fund performance and single manager mutual fund performance. The study results suggested that there were differences between the performance of team management and single manager. An individual performance differed from team performance; the organization design should be structured based on individual managerial skill and ability

2.3 Managerial Resourcefulness

R.N. Kanungo and Misra, 2005:

In the past research, there were three major problems investigated in theoretical understanding of the constructs referred to as managerial skills; First problem, the term skills explain the performance of the macro-management functions (planning and coordinating skills: - explained by Carroll & Gillen, 1987).

Mint berg 1973, also explained about the term skills to represent the execution of management roles such as information processing and leadership skills.

Anderson and Waters 1984

Second problem, Managers competent is defined as goal-setting and decision-making process. The term skills represented as performance appraisal and task function of the manager is explained by his/her appraising skills.

Klemp & McClelland, 1986, P.32

Third problem, the term skills defined by several scholars in various manner, like competencies and provide equally inclusive definitions; for example, 'as attributes of an individual that are necessary for effective performance in a job or life role' These attributes include general or specialized knowledge, physical and intellectual ability, personality traits, motives and self image.

In order to overcome these problems, R.N. Kanungo and Misra, 2005 have proposed an alternative conceptual framework in which the term skills is used to represent the ability to engage in an identifiable system of overt behavior, and competencies represents the ability to engage in identifiable patterns of cognitive mediation or modes of thinking in managerial and leadership roles. Skills are required to handle routine and programmed managerial tasks but for the competencies are required for non-routine and unprogrammable managerial tasks.

Finally, he was constructed four dimensions of managerial resourcefulness to measure the managerial competencies of middle-level managers.

The brief explanations of four dimensions are as follows:

1. Goal Directed Problem Orientation: An individual to stay oriented toward the goal at all times.

2. Proactive Analytical Orientation: Intellectual competencies of the individual to understand the problem through dispassionate style.

3. Problem Focused Perseverance: Action-Oriented competency to persevere with the task or problem.

4. Emotional Equanimity: The manager must have the emotional control for his leadership task.

3. Objective of the study:

Based on researcher inquiry and gap in the review of literature, the objective has been formulated and subsequently used to prove the hypothesis.

1. To assess the four dimensions of managerial resourcefulness of fund manager

2. To understand the impact of demographic variables on managerial resourcefulness of fund managers

3. To know the impact of demographic variables on factors determining performance of fund managers.

4. To suggest the managerial implication based on outcome of the study.

3.1. Research Hypothesis

H1: Managerial resourcefulness of fund managers is different on the various levels of Designation and Experience of fund managers.

112: Perceived Factor determining performance of fund managers is different on the various levels of Designation and Experience in the field of Mutual Fund Inc.

4. Research Design and Methodology:

This study followed both descriptive and explanatory research design. The former design is meant for the purpose of describing the variable characteristics in the given concept. The latter design is for the finding the relationship between concepts. The research approach follows the deductive logic in order to test the theory. Survey research strategy is followed in this study; Questionnaire is used as data collection methods. Undisguised and structured questionnaire method is followed.

4.1 Data Collection and Sample Design:

Data collection

This study collected both primary and secondary data. The self-administered questionnaires were given to the managers through post and the relevant data was collected. Apart from this, secondary sources of information used to understand the Mutual Fund Industry in India.

Sampling design

The sampling unit of the study is chief investment officer, fund manager and investment advisory in mutual fund industry. The study followed Quota sampling especially based on Bangalore and Mumbai region. Out of 300 samples, the researcher was collected 103 completed questionnaires.

5. Measures used for the study:

5.1 Methodology followed to Measure Managerial resourcefulness:

Managerial resourcefulness concept was contributed by R.N.Kanuango and Misra, 2005 .A set of 29 items derived from 4 dimensions such as Goal Directed Problem Orientation

(GDPO), Proactive Analytical Orientation (PAO), Problem Focused Perseverance (PFP) and Emotional Equanimity (EE) all items in the form of 6 point scale i.e. 1 is Very Uncharacteristic of me and 6 is Very Characteristics of me.

5.2 Measures Used for factors determining performance of fund manager

Factor Analysis:

The study used the factor analysis to examine the variables of factors which are determining performance of fund managers. The 14 variables in the data were reduced to 5 factor models and subsequently each factor is named based on the variable summarization in the given factors. So 5 factors derived from 14 variables and it was named as Factor1: Internal Industry force (IIF), Factor2: Manager Intelligence (MI), Factor 3: Strategy and Execution (S&E), Factor 4: Experience and Expertise (E&E), and Factor 5: External Stakeholders (ES) and their respective loadings also shown in the tables (Table 1-1).

The factor analysis used various steps as follows:

Step 1: Principal component analysis (PCA) is a method used to transform a set of correlated variables into a set of uncorrelated variables (here factors) so that the factors are unrelated and the variables selected for each factor are related. Next, PCA is used to extract the number of factors required to represent the data. For the Study, we have 14 variables (statements rating varying from 1 to 7) 1 is hardly determined performance and 7 is highly determined performance and the determined Eigen value is greater than 1 to extract variables for the factors This step is to determine the method of factor extraction, number of initial factors and the estimates of factors.

Step 2: The column titled Communalities provides communalities for each variable calculated from the factor matrix described

above. The proportion of variance explained by the common factors is called Communality of the variable. For example the internal process team cooperation. Communalities are .769 and list for all the rest of the variables. It is understood that the 5 factor model explains only 72% of the variance in the selected variables.

Step 3: Varimax Method Rotation is used, focuses on transforming the factors to make them more interpretable. The extracted factors variances contain 72%. Varimax Rotation method is used to enhance the interpretability of factors. The Rotated Factor Matrix showed Rotated Component Matrix using Varimax rotation and each factor identifies itself with a few set of variables.

6. Data analysis and Statistical tools used:

The data were analyzed by using different statistical tools like Descriptive statistics (Frequency distribution, Mean Score), Cross tabulations for educational qualification and experiences. Factor analysis is employed to know the factors which determining the performance of the fund managers. One way analysis of variances is used to test the statistical significance difference among various levels of designation and experience and reliability has done to test the goodness of the data.

7. Results:

Demographic Profile - Overall

- Out of 103 respondents, 9% are Chief Investment Officer, 11% are Fund managers and 83% are Investment advisor.

- 64.1% of respondents are between the ages of 23-35; those are in Fund manager and Investment advisors. Then, 46 and above ages of respondents are in chief investment officer.

- Out of 103 respondents, 90.3% of respondents were in Male and rests of the respondents were in Female.

- In the case of educational qualification 52 % of respondents obtained MBA and other respondents possessed other professional's courses like C.A, ACS.

- Experience in the field of Mutual Fund industry maximum respondents i.e. 50% had Minimum 5 years experience.

- Experience in the field of Non-Mutual Fund industry, maximum 38.8% of respondents had less than 5 years experience.

Mean Score:

In the descriptive statistics, the study used overall means score for managerial resourcefulness across different levels of designation. The result of the study showed (Table 1-7) that the maximum mean score occurred for Proactive analytical orientation (PAO) and Goal directed problem orientation (GDPO) across various level of designation such as chief investment officer, fund manager and investment advisor.

One Way Anova:

Managerial Resourcefulness:

i) The study used one way ANOVA to prove whether there is statistically significant difference of dependent variables (dimensions of managerial resourcefulness) among different levels of designation and experience. For the level of designation, PFP and PAO are statistically significant differences among the variables, and also in the case of experience GDPO and EE are statistically significant differences among the dependent and independent variables. The analysis showed (Table-3&1-5) the statistically significant difference between the variables.

Factors determining performance of fund managers:

ii) The study used one way ANOVA to prove whether there is statistically significant difference of dependent variables (Factors determining performance of fund managers) among different levels of designation and experience. For the level of designation, Internal Industry force (IIF), Manager Intelligence (MI) and Strategy and Execution (S&E) are statistically significant differences between the variables (IV and DV), and in the case of experiences, some factors are statistically significant difference between the variables which are Manager intelligence (MI), Internal industry force (IIF) and Expertise and Experience and their respective results are shown in tables (Table 1-4 & 1-6)

Reliability test:

Cronbach alpha reliability has shown the consistencies among the items in the dimensions of Managerial Resourcefulness and factors determining performance of fund managers. It showed all the dimensions have more .7 of cronbach alphas which are good (Nunally, 1998)

Factor Analysis: The factors were grouped in to 5 factor model namely internal industry force, Mangers Intelligence, Expertise & Experience, strategy & Execution and External Stake holders.

A high degree of co-efficient was present in the Managers' intelligence influenced namely 'market sentiments 'as the score was 0.89 and the second highest degree of co-efficient was present in the external stakeholders, which is SEBI's decisions influences the act of fund managers as the score was 0.88

8. Suggestion and Conclusion:

- The study proved that the statistically significant difference on some of the dimensions of Managerial resource-fulness (PAO & PFP) of fund managers among various levels of designation.

- Some of the literatures are Tenure Timing ability, fund manager performances contributed by Bruce A Costa and Gary.E. (Tenure), David R. Gallagher, Andrew N. Ross, and Peter L (security timing ability) supported that there is no relationship of fund manager's experience, designation, manager style among their performance.

- This study outcome aligned with Aron .A. Gotteman, Mathew R. morey which showed that most of the fund managers had higher educational qualification and it helps them to enhanced their performance..

- The study showed that learning and training is essential for the future Fund Managers to improve their managerial competencies.

- The study suggested that the fund manager should seek to have high awareness of their industry, market sentiments, competitors, SEBI regulations, timing ability, trained for updating the mutual fund industry, team cooperation etc. It is supported by various literatures, which are contributed by Honghui Chen, Hemang Desai, Srinivasan Krishnamurthy , Ding du, et al and Stefan Engström,.

- The study suggested that managerial resourcefulness is essential for the role of fund manager performance.

- The fund manager performance is important to the Indian Mutual Fund Industry.

Summary:

The study attained above objectives which are examined the managerial resourcefulness (dependent variables) and factors determining performance of fund manager (dependent variables) among demographic variables

(independent variables) of fund managers. The study proved that there are statistically significant differences among managerial resourcefulness, factors determining performance of fund managers among various levels of experiences and designations of fund managers. Most of the literatures are also supported that there is no relationship between tenure, style, demographic profiles and the performance of fund managers. Fund Managers competent depends in their self- motive, self regulatory and emotion equanimity towards fulfilled the expectation of investors and industries.

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- Dr. Yasin Olum Lecturer Department of Political Science and Public Administration

Fig1-1 Demographic and Job Profile of Fund Managers.

Demographic and Job Profile Variable of Fund Managers (n=103)

Fig.2. Factors Determining Performance of Fund Manager
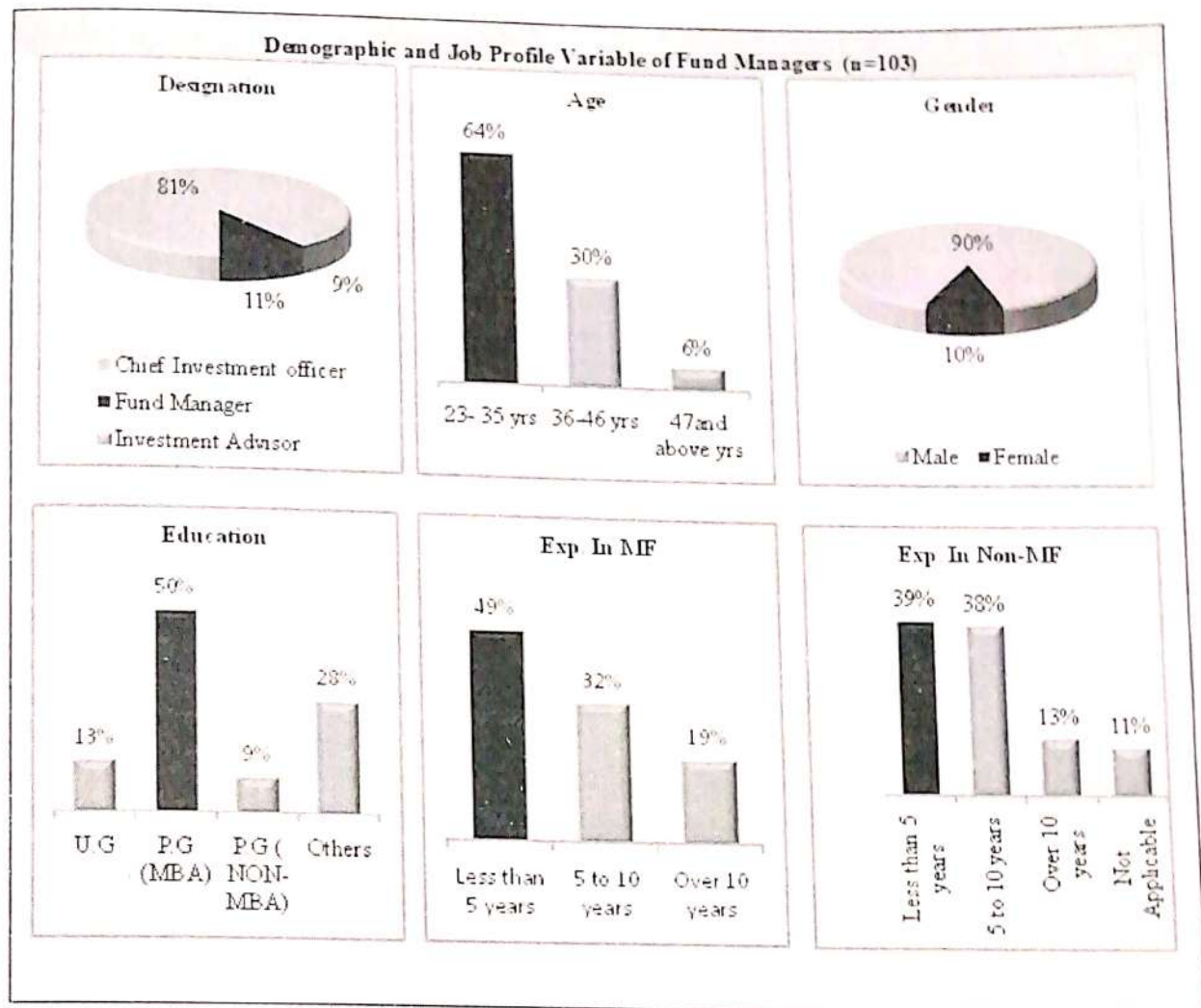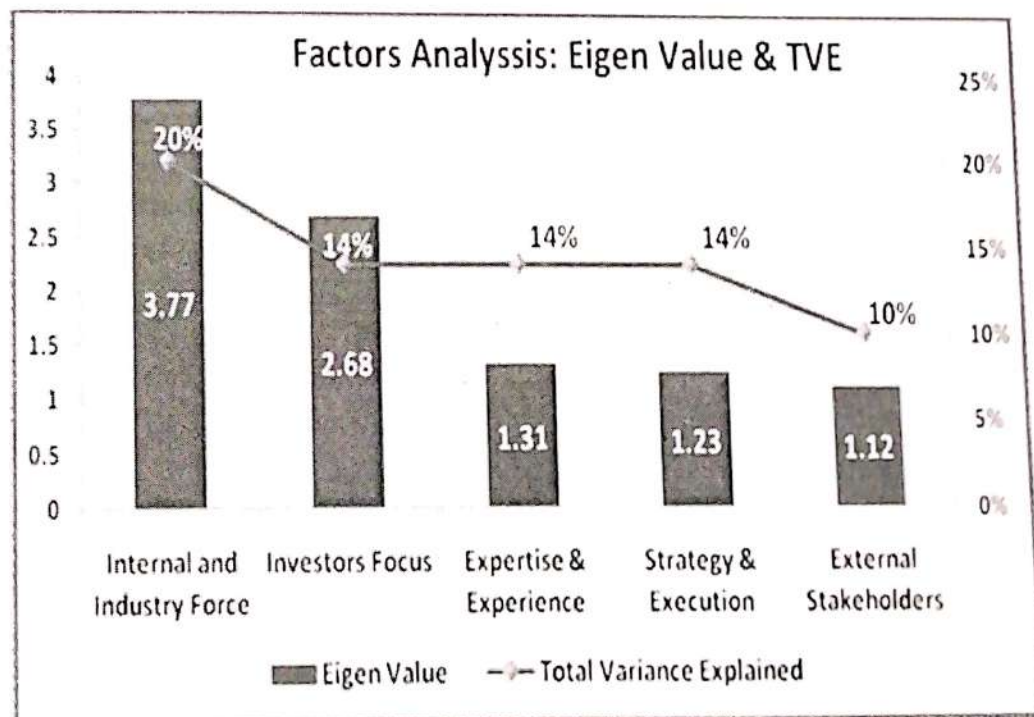
Variables/Factors	Internal and Industry Force	Managers intelligence	Expertise & Experience	Strategy & Execution	External Stakeholders	Communalities
Table- 1-1 Factor Analysis : Consolidated Results Rotated Component Matrix(a) — Component						
Eigen Value	3.77	2.68	1.31	1.23	1.12	
Total Variance Explained	20%	14%	14%	14%	10%	
Internal process team cooperation	0.84					0.76
Reputation of Organization	0.83					0.73
Orientation about related Industry activities	0.73					0.71
The growth of the MF Industry	0.70					0.62
Giving importance to market sentiments		0.89				0.83
Stock selectivity ability		0.65				0.73
Relevant Training about Industry updates		0.50				0.53
Analysis skill of Fund Manager			0.83			0.75
Fund Managers experience in the relevant schemes.			0.82			0.81
Market dynamism				0.78		0.72
Execution of the plan				0.75		0.75
Top Management encouragement				0.70		0.59
SEBI decision influences in the act of Fund Managers					0.88	0.85
Role of competitors					0.66	0.73

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Overall Mean Score of Managerial resourcefulness:

Table 1--2
Managerial Resourcefulness Dimensions across Designation
Mean Score

Dimensions	Chief Investment officer	Fund Manager	Investment Advisor	Overall
Goal Directed Problem Orientation	4.00	3.48	3.57	3.69
Proactive Analytical Orientation	5.30	5.03	5.22	5.18
Problem Focused Perseverance	3.58	3.06	4.00	3.52
Emotional Equanimity	3.03	2.64	2.89	2.85

Table 1-3 Cronbaach's Inter item Reliability Test – Managerial Resourcefulness

S.No	Dimensions	Cronbach's Alpha	No. of Items
1.	Goal Directed Problem Orientation	.843	9
2.	Proactive Analytical Orientation	.693	12
3.	Problem Focused Perseverance	.778	4
4.	Emotional Equanimity	.760	4

Table 1—4: Anova on Managerial Resourcefulness by Designation

Dependent Variables	Level Designation	N	Mean	Std. Dev.	F Value	Sig.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Goal Directed Problem Orientation	Chief Investment officer	9	4.00	0.74	1.98	0.143
	Fund Manager	11	3.48	1.32		
	Investment Advisor	83	3.57	1.39		
	Total	103	3.69	1.18		
Proactive Analytical Orientation	Chief Investment officer	9	5.30	0.26	3.54	0.033
	Fund Manager	11	5.03	0.58		
	Investment Advisor	83	5.22	0.41		
	Total	103	5.18	0.45		
Problem Focused Perseverance	Chief Investment officer	9	3.58	1.02	5.10	0.008
	Fund Manager	11	3.06	1.50		
	Investment Advisor	83	4.00	1.00		
	Total	103	3.52	1.26		
Emotional Equanimity	Chief Investment officer	9	3.03	1.02	1.18	0.312
	Fund Manager	11	2.64	0.95		
	Investment Advisor	83	2.89	1.29		
		103	2.85	1.09		

The header spans: "One Way ANOVA on Managerial Resourcefulness by Designation" with "Level" above Designation and "Statistics" above N, Mean, Std. Dev., F Value, Sig.

Table 1-3 : One Way ANOVA on Factors Determining Performance by Designation

Dependent Variables	Designation	N	Mean	Std. Dev.	F Value	Sig.
			Level		Statistics	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Internal and Industry Force	Chief Investment officer	9	5.72	0.30	0.39	0.679
	Fund Manager	11	5.67	1.02		
	Investment Advisor	83	5.82	0.66		
	Total	103	5.73	0.72		
Managers Intelligence	Chief Investment officer	9	5.96	0.43	2.62	0.078
	Fund Manager	11	5.52	1.03		
	Investment Advisor	83	5.75	0.89		
	Total	103	5.74	0.84		
Expertise & Experience	Chief Investment officer	9	5.78	0.54	8.12	0.00
	Fund Manager	11	5.61	0.82		
	Investment Advisor	83	6.27	0.65		
	Total	103	5.86	0.73		
Strategy & Execution	Chief Investment officer	9	5.93	0.31	0.62	0.542
	Fund Manager	11	6.00	0.71		
	Investment Advisor	83	6.08	0.57		
	Total	103	6.00	0.55		
External Stakeholders	Chief Investment officer	9	5.83	0.48	2.87	0.937
	Fund Manager	11	5.78	0.80		
	Investment Advisor	83	5.79	0.76		
	Total	103	5.80	0.68		

Table1-6 Anova on Managerial Resourcefulness byExperience in MF

Dependent Variables	Level		Statistics				
	Experience in MF	N	Mean	Std. Dev.	F Value	Sig.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Goal Directed Problem Orientation	Less than 5 years	50	3.28	1.36	9.13	◉ 0.000
	5 to 10 years	33	3.79	0.86		
	Over 10 years	20	4.41	0.60		
	Total	103	3.69	1.18		
Proactive Analytical Orientation	Less than 5 years	50	5.14	0.55	0.87	◉ 0.423
	5 to 10 years	33	5.15	0.29		
	Over 10 years	20	5.28	0.37		
	Total	103	5.18	0.45		
Problem Focused Perseverance	Less than 5 years	50	3.45	1.47	0.25	◉ 0.779
	5 to 10 years	33	3.66	1.03		
	Over 10 years	20	3.53	1.02		
	Total	103	3.52	1.26		
Emotional Equanimity	Less than 5 years	50	2.67	1.10	2.65	◉ 0.076
	5 to 10 years	33	3.25	1.29		
	Over 10 years	20	2.79	0.70		
	Total	103	2.85	1.09		

Table1-7 Anova on Factors determining the performance by Experience in MF

Dependent Variables	Level		Statistics				
	Experience in MF	N	Mean	Std. Dev.	F Value	Sig.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Internal and Industry Force	Less than 5 years	50	5.75	0.92	0.03	⬤ 0.966	
	5 to 10 years	33	5.72	0.54			
	Over 10 years	20	5.71	0.38			
	Total	103	5.73	0.72			
Managers Intelligence	Less than 5 years	50	5.69	0.94	0.18	⬤ 0.837	
	5 to 10 years	33	5.78	0.81			
	Over 10 years	20	5.81	0.64			
	Total	103	5.74	0.84			
Expertise & Experience	Less than 5 years	50	5.80	0.80	1.27	⬤ 0.285	
	5 to 10 years	33	6.06	0.69			
	Over 10 years	20	5.78	0.60			
	Total	103	5.86	0.73			
Strategy & Execution	Less than 5 years	50	6.15	0.62	4.25	⬤ 0.017	
	5 to 10 years	33	5.87	0.44			
	Over 10 years	20	5.81	0.45			
	Total	103	6.00	0.55			
External Stakeholders	Less than 5 years	50	5.96	0.59	5.76	⬤ 0.004	
	5 to 10 years	33	5.43	0.85			
	Over 10 years	20	5.86	0.51			
	Total	103	5.80	0.68			

VOLATILITY IN INDIAN STOCK MARKET : A STUDY WITH REFERENCE TO SELECTED NIFTY COMPANIES

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Abstract :

Volatility has been one of the most active and successful areas of research in time series econometrics and economic forecasting in recent decades. Volatility is a statistical measure of the dispersion of returns for a given security or market index. The aim of this paper is to estimate conditional volatility models in an effort to capture the salient features of stock market volatility in India and evaluate the models in terms of out-of sample forecast accuracy. The sample of this study is five companies taken from Nifty companies. The sample companies are Reliance Industries, State Bank of India, Jindal Steel, BHEL and Asian Paints. The study period has taken from January 2007 to December 2012. Tools used for the study is descriptive model, unit root test and GARCH model (1,1). This finding has implications for more volatile during the study period for all sample companies.

Keywords: *Stock market, Volatility, GARCH model, Unit root test.*

1. Introduction

Volatility is a statistical measure of the dispersion of returns for a given security or market index. Volatility is generally measured either by using the standard deviation or variance between returns from that same security or market index. Commonly, the higher the volatility, the riskier is the security. In terms of options pricing, volatility is a variable in option-pricing formula showing the extent to which the return of the underlying asset will fluctuate between now and the options expiration. Volatility, expressed as a percentage coefficient within option-pricing formula, arises from daily trading activities. How volatility is measured will affect the value of the coefficient used.

Volatility is the variability of the asset price changes over a particular period of time and it is very hard to predict it correctly and consistently. In financial markets volatility presents a strange paradox to the market participants, academicians and policy makers – without volatility superior returns cannot be earned, since a risk free security offers meager returns, on the other hand if it is 'high' it will lead to losses for the market participants and represent costs to the overall economy. Therefore there is no gainsaying with the statement that volatility estimation is an essential part in most finance decisions be it asset allocation, derivative pricing or risk management.

Volatility is an important phenomenon in markets in general and security markets in particular. Modeling stock market volatility has been the subject of empirical and theoretical investigation by both academicians and practitioners. As a concept, volatility is simple and intuitive. It measures the variability or dispersion about a central tendency. In other words, it measures the current price of an asset deviates from its average past values. The study of volatility becomes more important due to the growing linkages of national market in currency; commodity and stock with rest of the world markets and existence of common players have given volatility a new property – that of its speedy transmissibility across markets. To many among the general public, the term volatility is simply synonymous with

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risk: in their view high volatility is to be deplored, because it means that security values are not dependable and the capital markets are not functioning as well as they should.

2. Review of Literature

There are few studies which examined emerging equity market volatility. Bekaert and Harvey (1995) examined the emerging equity market characteristics in relation to developed markets. Emerging markets found to have four distinguishing features: average returns were higher, correlations with developed markets returns were low, returns were more predictable and volatility is higher. They argued that modeling volatility is difficult in emerging markets, especially in segmented markets. In fully integrated markets volatility is strongly influenced by world factors whereas in segmented markets it is strongly influenced by local factors. More open economies had lower volatility and political risk to a large extent explained the cross sectional in volatility. Finally, they found significant decline in volatility in emerging markets following capital market liberalization. Bekaert et al. (1998) argued that emerging markets returns are highly non-normally distributed and exhibit positive skewness in it.

Poshakwale Sunil (2002) examined the random walk hypothesis in the emerging Indian stock market by testing for the nonlinear dependence using a large disaggregated daily data from the Indian stock market. The sample used was 38 actively traded stocks in the BSE National index. He found that the daily returns from the Indian stock market do not conform to a random walk. Daily returns from most individual stocks and the equally weighted portfolio exhibit significant non-linear dependence. This is largely consistent with previous research that has shown evidence of non-linear dependence in returns from the stock market indices and individual stocks in the US and UK.

Yakob, Beal and Delpachitra (2005) examined

seasonal effects of ten Asian Pacific stock markets, including the Indian stock market, for the period January 2000 to March 2005. They stated that this is a period of stability and therefore ideal for examining seasonality as it was not influenced by the Asian financial crisis of the late nineties. Yakob, et al., concluded that the Indian stock market exhibited a month-of-the-year effect in that statistically significant negative returns were found in March and April whereas statistically significant positive returns were found in May, November and December. Of these five statistically significant monthly returns, November generated the highest positive returns whereas April generated the lowest negative returns. In a similar study by Bodla and Jindal (2006) several seasonal anomalies in the Indian stock market utilizing the S&P CNX Nifty index for the period January 1998 to August 2005. For the monthly effect, they did find some significant differences utilizing ANOVA for their sub-period, January 2002 to August 2005. However, they were unable to find any significant differences among individual months.

Rakesh Kumar and Raj S Dhankar (2011) in their article titled, "Distribution of Risk and Return: A test of normality in Indian stock market", examined the normality of return and risk of daily, weekly, monthly and annual returns in Indian stock market. They used parametric and non-parametric test to prove these objectives. They have selected Sensex, BSE 100 and BSE 500 indices from Bombay Stock Exchange (BSE) for the period 1996 to 2006. The results show that, the returns are negatively skewed for all the indices over the period. Asymmetry is found in risk and return in case of daily and weekly returns i.e., risk and return relationship seems inconsistent in case of daily and weekly returns. Monthly and annual return, however are found normally distributed for all three indices over the period of time. The study shows the importance of time horizon in investment strategy for the Indian stock market.

Raja sethu Durai and Saumitra N Bhadurai (2011) in their article titled, "Correlation dynamics in Equity markets", aimed to analyze the correlation structure of the Indian equity markets with that of world markets. The indices considered for the study are NASDAQ composite (USA), S & P 500 (USA), FTSE 100 (UK) and DAX 30 (Germany) classified as developed markets. KLSE composite (Malaysia), Jakarta composite (Indonesia), Straits times (Singapore), Seoul composite (South Korea), Nikkei (Japan), Taiwan weighted index (Taiwan) and the S & P CNX Nifty (India) are classified as Asian market, for the period 1997 to 2006. The logistic smooth transition regression (LSTR) model results for the conditional time varying correlation of S & P CNX Nifty with six Asian market and S & P CNX Nifty with four developed markets show that there is a significant regime shift in the year 2000 and there is a considerable increase in integration in the second regime. This indicates that the S & P CNX Nifty index is moving towards a better integration with other world markets but not at a very noteworthy phase.

3. Statement of the Problem

Most of the stock market investors are not able to pick rights stocks at right time and they met with loss. This paper provides guidance to the investors on how to invest in stocks at right time.

3.1. Objectives of the Study

- To study the volatility behavior of selected companies listed in NSE.

- To analyse the volatility using GARCH model.

3.2. Sample Design and Tools used for Analysis

Sample Area: Indian Stock Market

Population: Nifty

Sample: The sample of this study is 5 companies taken from Nifty

Study Period: January 2007 to December 2012

Sampling Techniques: The research has adopted non-probability convenience sampling

Sources of Data: Secondary data was collected from NSE website. The other required data were collected from various books, journals and magazines.

Sample companies for the study: Reliance Industries, State Bank of India, Jindal Steel, BHEL, Asian Paints.

Tools used for the study: Descriptive model, Unit Root Test and GARCH (1,1) Model.

4. Methodology

4.1 Descriptive Model

Descriptive statistics are typically distinguished from inferential statistics. In the business world, descriptive statistics provide a useful summary of security returns when researchers perform empirical and analytical analysis, as they give a historical account of return behavior.

4.2 Unit Root Test

A unit root test is a statistical test for the proposition that in an autoregressive statistical model of a time series, the autoregressive parameter is one. It is a test for detecting the presence of stationarity in the series. For randomness purpose, there are two unit root tests. One is Augmented Dickey Fuller (ADF) which is parametric test another most powerful test to check the randomness is the Phillips Perron (PP) unit root test which is non-parametric test. If the test statistic value is greater than critical value at 1% or probability value is less than the value then we reject our null hypotheses.

4.3 GARCH Model

In this model, the conditional variance is represented as a linear function of its own lags.

The simplest model specification is the GARCH(1,1) model

The general specification of GARCH is, GARCH (p, q) is as

$$\sigma_t^2 = \omega + \sum_{j=1}^{q} \alpha_j \varepsilon_{t-1}^2 + \sum_{i=1}^{p} \beta_i \sigma_{t-1}^2$$

where, p is the number of lagged σ^2 terms and q is the number of lagged ε^2 terms.

5. Results and Analysis

5.1 Descriptive Statistics

Table 1: Descriptive Statistics of Sample Companies from 2007 to 2012

Company Name	Mean	S.D	Skewness	Kurtosis
Reliance	0.0040	0.2009	0.8743	15.7882
SBIN	0.0147	0.1808	-2.5049	16.1630
Jindal Steel	1.0947	5.2686	3.9668	25.8009
BHEL	0.0726	2.9698	-0.2144	4.8774
Asian Paints	1.3257	1.6573	-0.321	2.5642

Table 1 reports the results of negative values for the skewness indicate data that are skewed left and positive values for the skewness indicate data that are skewed right. By skewed left, we mean that the left tail is long relative to the right tail. Similarly, skewed right indicates that the right tail is long relative to the left tail. Some measurements have a lower bound and are skewed right. A kurtosis value near zero indicates a shape close to normal. A negative value indicates a distribution which is more peaked than normal. A negative value indicates a distribution which is more peaked than normal, and a positive kurtosis indicates a shape flatter than normal. An extreme positive kurtosis indicates a distribution where more of the values are located in the tails of the distribution rather than around the mean.

5.2 Augmented Dickey Fuller Test (ADF)

Table 2: ADF Test of Reliance Industries

		t-Statistic	Prob
Augmented Dickey-Fuller test statistic		-6.6194	0.0000
Test Critical values	1% level	-3.5461	
	5% level	-2.9117	
	10% level	-2.5936	

Table 2 reports the results of Augmented Dickey Fuller Test of Stationarity of Reliance Industries returns for the study period. It is to be noted that the Reliance Industries are stationarity in the level difference itself with the value of -6.6194 and with the probability value of 0.0000. The test statistic value was smaller than the Test Critical values were -3.5461, -2.9117 and -2.5936 at 1% level, 5% level and 10% level respectively. It is concluded that during the study period, the returns of Reliance Industries were stationarity in the level difference itself. Hence, the return values were considered to be stationary.

Table 3: ADF Test of State Bank of India

		t-Statistic	Prob
Augmented Dickey-Fuller test statistic		-10.9609	0.0000
Test Critical values	1% level	-3.5461	
	5% level	-2.9117	
	10% level	-2.5936	

Table 3 reports the results of Augmented Dickey Fuller Test of Stationarity of State Bank of India returns for the study period. It is to be noted that the State Bank of India are stationarity in the level difference itself with the value of -10.9609 and with the probability value of 0.0000. The test statistic value was smaller than the Test Critical values were -3.5461, -2.9117 and -2.5936 at 1% level, 5% level and 10% level respectively. It is concluded that during the study period, the returns of State Bank of India were stationarity in the level difference itself. Hence, the return values were considered to be stationary.

Table 4: ADF Test of Jindal Steel

		t-Statistic	Prob
Augmented Dickey-Fuller test statistic		0.4561	0.0000
Test Critical values	1% level	-3.5482	
	5% level	-2.9126	
	10% level	-2.5940	

Table 4 reports the results of Augmented Dickey Fuller Test of Stationarity of Jindal Steel returns for the study period. It is to be noted that the Jindal Steel are stationarity in the level difference itself with the value of 0.4561 and with the probability value of 0.0000. The test statistic value was smaller than the Test Critical values were -3.5482, -2.9126 and -2.5940 at 1% level, 5% level and 10% level respectively. It is concluded that during the study period, the returns of Jindal Steel were stationarity in the level difference itself. Hence, the return values were considered to be stationary.

Table 5: ADF Test of BHEL

		t-Statistic	Prob
Augmented Dickey-Fuller test statistic		-0.9862	0.0000
Test Critical values	1% level	-3.5461	
	5% level	-2.9117	
	10% level	-2.5936	

Table 5 reports the results of Augmented Dickey Fuller Test of Stationarity of BHEL returns for the study period. It is to be noted that the BHEL are stationarity in the level difference itself with the value of -0.9862 and with the probability value of 0.0000. The test statistic value was smaller than the Test Critical values were -3.5461, -2.9117 and -2.5936 at 1% level, 5% level and 10% level respectively. It is concluded that during the study period, the returns of BHEL were stationarity in the level difference itself. Hence, the return values were considered to be stationary.

Table 6: ADF Test of Asian Paints

		t-Statistic	Prob
Augmented Dickey-Fuller test statistic		-6.8144	0.0000
Test Critical values	1% level	-3.5461	
	5% level	-2.9173	
	10% level	-2.5936	

Table 6 reports the results of Augmented Dickey Fuller Test of Stationarity of Asian Paints returns for the study period. It is to be noted that the Asian Paints are stationarity in the level difference itself with the value of -6.8144 and with the probability value of 0.0000. The test statistic value was smaller than the Test Critical values were -3.5461, -2.9173 and -2.5936 at 1% level, 5% level and 10% level respectively. It is concluded that during the study period, the returns of Asian Paints were stationarity in the level difference itself. Hence, the return values were considered to be stationary.

5.3 GARCH Model

Table 7: Volatility Behaviour in Reliance Industries – Variance Equation

Variable	Coefficient	Std.Error	z-Statistic	Prob
C	0.0188	0.0264	0.7121	0.4764
ARCH	0.2068	0.3433	-0.6026	0.5468
GARCH	0.5918	0.5918	1.0453	0.2959

The results of GARCH (1,1) effect for Reliance Industries returns are given in table 7. According to the table, the effect of variance equation coefficient of Reliance Industries was 0.0188. The coefficient of parameters 'c' at 0.0188, ARCH at 0.2068 and GARCH 0.5918. The sum of ARCH and GARCH Reliance Industries was close to one (0.7986). This reveals the Reliance Industries experienced the lower volatility. It's not at the very risky to the investors during the study period from 2007 to 2012.

Table 8: Volatility Behaviour in State Bank of India – Variance Equation

Variable	Coefficient	Std.Error	z-Statistic	Prob
C	0.0103	0.0026	0.0026	0.0001
ARCH	-0.0613	0.0514	0.0514	0.2331
GARCH	0.4615	0.1465	0.1465	0.0016

The results of GARCH (1,1) effect for State Bank of India returns are given in table 8. According to the table, the effect of variance equation coefficient of State Bank of India was 0.0103. The coefficient of parameters 'c' at 0.0103, ARCH at -0.0613 and GARCH 0.4615. The sum of ARCH and GARCH State Bank of India was close to one. This reveals the Reliance Industries experienced the lower volatility. It's not at the very risky to the investors during the study period from 2007 to 2012.

Table 9: Volatility Behaviour in Jindal Steel – Variance Equation

Variable	Coefficient	Std.Error	z-Statistic	Prob
C	3.50E+11	1.11E+15	0.4080	0.6832
ARCH	-0.1157	1784.93	-0.5191	0.6037
GARCH	0.4327	583.38	0.4876	0.6259

The results of GARCH (1,1) effect for Jindal Steel returns are given in table 9. According to the table, the effect of variance equation coefficient of Jindal Steel was 3.50E+11. The coefficient of parameters 'c' at 3.50E+11, ARCH at -0.1157 and GARCH 0.4327. The sum of ARCH and GARCH Jindal Steel was close to one. This reveals the Jindal Steel experienced the lower volatility. It's not at the very risky to the investors during the study period from 2007 to 2012.

Table 10: Volatility Behaviour in BHEL – Variance Equation

Variable	Coefficient	Std.Error	z-Statistic	Prob
C	2.6773	5.4191	0.4941	0.6213
ARCH	0.9506	1.4686	0.6473	0.5174
GARCH	-0.5778	1.7126	-0.3374	0.7358

The results of GARCH (1,1) effect for BHEL returns are given in table 10. According to the table, the effect of variance equation coefficient of BHEL was 2.6773. The coefficient of parameters, 'c' at 2.6773, ARCH at 0.9506 and GARCH -0.5778. The sum of ARCH and GARCH BHEL was close to one. This reveals the BHEL experienced the lower volatility. It's not at the very risky to the investors during the study period from 2007 to 2012.

Table 11: Volatility Behaviour in Asian Paints – Variance Equation

Variable	Coefficient	Std.Error	z-Statistic	Prob
C	6.3594	2.0017	3.1771	0.0015
ARCH	0.2419	0.2097	1.1538	0.2486
GARCH	-0.2307	0.4146	0.5563	0.578

The results of GARCH (1,1) effect for BHEL returns are given in table 11. According to the table, the effect of variance equation coefficient of Asian Paints was 6.3594. The coefficient of parameters, 'c' at 6.3594, ARCH at 0.2419 and GARCH -0.2307. The sum of ARCH and GARCH Asian Paints was close to one. This reveals the Asian Paints experienced the lower volatility. It's not at the very risky to the investors during the study period from 2007 to 2012.

6. Summary and Conclusion

Reliance Industries

- The results of Augmented Dickey Fuller Test are noted that the Reliance Industries are stationarity in the level difference itself with the value of -6.6194.

- The results of GARCH (1,1) effect for Reliance Industries. The coefficient of parameters Reliance Industries 'c' are 0.0183, ARCH 0.2069 and GARCH 0.5918.

State Bank of India

- The results of Augmented Dickey Fuller

Test are noted that the State Bank of India are stationarity in the level difference itself with the value of -10.9609.

- The results of GARCH (1,1) effect for State Bank of India. The coefficient of parameters State Bank of India 'c' are 0.0103, ARCH 0.0103 and GARCH - 0.0103.

Jindal Steel

- The results of Augmented Dickey Fuller Test are noted that the Jindal Steel are stationarity in the level difference itself with the value of 0.4561.

- The results of GARCH (1,1) effect for Jindal Steel. The coefficient of parameters Jindal Steel 'c' at 3.50E+11, ARCH at -0.1157 and GARCH 0.4327.

BHEL

- The results of Augmented Dickey Fuller Test are noted that the BHEL are stationarity in the level difference itself with the value of 0.4561.

- The results of GARCH (1,1) effect for BHEL. The coefficient of parameters BHEL 'c' at 3.50E+11, ARCH at -0.1157 and GARCH 0.4327.

Asian Paints

- The results of Augmented Dickey Fuller Test are noted that the Asian Paints are stationarity in the level difference itself with the value of -6.8144.

- The results of GARCH (1,1) effect for Asian Paints. The coefficient of parameters Asian Paints 'c' at 6.3594, ARCH at 0.2419 and GARCH -0.2307.

India has been witness to years of up and down cycle in the stock markets. Since 1992, the Indian markets have peaked every fourth year and then dropped 35-45% during the next three years. Some of the major conclusions derived in the study are as under. News related to any political and economical affair has direct effect on stock market. Any unusual news about a particular company will affect the value of the scrip. It is suggested that the investors who want to measure the accurate volatility of the stock market, the GARCH model which is the best one to measure the volatility of the stock market. It's in the final hands of the investor to invest in stock market at the right time.

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A STUDY ON CONFLICT MANAGEMENT BEHAVIOUR AND ITS REPERCUSSIONS ON VIRTUAL TEAM EFFECTIVENESS

Prof. Sheela Rosalyn*

Abstract:

With the Computer Mediated Communications being the highlight of modern work world in a mad rush to accomplish targets efficiently in a technology driven world, it becomes essential to study how Virtual Teams function in the absence of social presence of its non-collocated members. Arising concerns thereof would be inevitably lack of trust, absence of team cohesion and inefficient conflict management trends that could take a toll on effective functioning of virtual teams. Team members generally respond to conflicts arising therefrom, not as a result of personal remorse, but as something that springs out as virtual teams start working on their projects. This could be related to taking decisions related to their assignment and in the absence of physical teams, how member using CMC deal with conflicting work related issues in their teams.

This paper is primarily a study of Conflict Management Behaviour among virtual team members and its subsequent repercussions on team effectiveness. To this end, a 19 item questionnaire on Conflict Management Behaviour was administered to respondents residing in Bangalore, who have been part of virtual teams to gain insight as to how they have responded to conflicts in their teams. The questionnaire measured 5 Behaviour styles namely avoidance, accommodation, competition, collaboration and compromise. The respondents were required to answer the items using the likert scale pattern ranging on a 5 point scale, with 1 standing for "almost never" and 5 for "almost always". The demographic parameters considered for the study would be age, sex, years of virtual team experience. The findings of the study can also be extended to explore implications of Conflict Management on the strength of team cohesiveness and Virtual Team Citizenship Behaviour in the long run.

KEYWORDS : Virtual team, Team effectiveness, Conflict Management Behaviour, Computer Mediated Communication, Team Cohesiveness

Introduction

Virtual teams that operate asynchronously must do without mechanisms that synchronous teams have to coordinate their activity and manage conflict. New pressures facing organizations have ledmany to suggest the use of global virtual teams. Simultaneously, recent technological advances are enabling new ways of structuring, processing, and distributing work and communication activities to overcome boundaries of time and space (Boudreau, Loch, Robey, & Straub 1998). In particular, new technologies are providing the means for dispersed (different place), asynchronous (different time) virtual work. Establishing links and connections is no longer a question of technical feasibility. The key question is, how can organizations create virtual teams that work effectively?

Extant theory of how teams operate is largely based on work done in non-virtual teams. Among the taken for granted assumptions in theory from non-virtual teams is that teams operate more or less in the same space and time; i.e., synchronously. Synchronous communication is assumed in most treatments

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of team functioning - for instance, in understanding how teams manage internal conflicts that could impede team functioning. Yet virtual teams cannot necessarily rely on traditional social cues and mechanisms, leaving them without a crucial mechanism for handling problems of team functioning. In such cases, the use of temporal coordination mechanisms imposed upon a team can be valuable because it can substitute to some extent for the cues that would naturally be available to members in a traditional face-to-face context (McGrath 1991; Ocker et al. 1995-1996).

While there seems to be great potential for virtual teams, there are several fundamental sociotechnical difficulties in execution. Synchronous interaction is an orderly process wherein verbal and nonverbal cues help regulate the flow of conversation, facilitate turn-taking, provide immediate feedback, and convey subtle meanings. In lean asynchronous communication environments, the conveyance of cues is hindered, feedback is delayed, and there are often interruptions or long pauses in communication (McGrath 1991). In an asynchronous discussion, the norm is for many topics to be active at the same time with team members making contributions at different times (possibly on different topics) (Ocker et al. 1996). This can increase information overload and may reduce the synergy of the team if there is no linkage among the responses. In addition, long time lapses between communication events can lead to discontinuous and seemingly disjointed discussions (Ocker et al. 1996). This suggests that a significant challenge facing virtual teams is coordinating the temporal patterns of group behavior (McGrath 1991; Warkentin, Sayeed, & Hightower 1997).

Conflict in Virtual Teams

In virtual teams, the dispersed asynchronous communication context renders many of the usual forms of social control in teams inoperable (e.g., direct supervision, physical proximity, shared experiences, social trust) (Jarvenpaa et al. 1998). Virtual teams typically communicate via technology that is lean, low in social presence, and low in interactivity (Zack 1993). In other words, a groupware system like Lotus Notes does not have the same capacity to convey the multiple cues that characterize human conversation. Gestures and nonverbal nuances, cues of social influence, symbolic content, and contextual cues are not captured or transmittable. This makes interaction and consensus building difficult (Straus 1996; Dennis 1996). As a result, effective communication in an asynchronous computer-mediated communication environment tends to require a great deal of effort (Smith & Vanacek 1990; Straus 1996). All of these communication and coordination difficulties create the potential for conflict in virtual teams that must be managed effectively (Jarvenpaa et al. 1998; Ocker et al. 1996; Turoff, Hiltz, Bahgat, & Rana 1993). Thus, while there are certainly many potential interesting factors to study about virtual teams, we focus on conflict management because it is a fundamental issue for effective virtual team performance given the inherent communication and coordination challenges they face.

1.2 Conflict Management Behavior

Past research has identified various behaviors manifested by team members during conflict (Ruble & Thomas 1976; Poole, Holmes, & DeSanctis 1991; Sambamurthy & Poole 1992; Miranda & Bostrom 1993-1994. We draw on work by Rahim (1983, 1992) and Thomas and Kilmann (1974) that delineates five conflict handling modes to describe conflict management in organizational work groups: avoidance, accommodation, competition, collaboration, and compromise.

Avoidance behavior is characterized by evasiveness and failure to confront other

parties. People demonstrating this behavior is apathetic toward conflicting points of view and outcomes in general. Accommodation behavior is characterized by an obliging concern for others. Competition behavior is characterized by each party pursuing his/her own interest without regard for others. This behavior involves concealment of information, competitiveness, and negative attitudes toward alternative solutions. Competitive interactions typically involve the use of power and domination as one party tries to force its views on the other. Collaboration behavior is characterized by attempts to identify and achieve outcomes that satisfy the interests of all parties involved. This behavior emphasizes openness to others' points of view, objective consideration of all information, and shared problem-solving toward a jointly optimal solution. Finally, compromise behavior is characterized by

intermediate concern for self and others. The parties acknowledge differences in preferences and then work toward settling on some intermediate position.

Need for the present study:

Increasing use of CMC in global scenario, subsequently leading to increase in Global Virtual Team, so understanding Conflict Management in this context is important. As virtual teams are said to be more effective than collocated teams, its essential for us to understand how or what makes it more efficient and in what context, is it only on the task performing side of it or is it also on the interpersonal exchange among virtual members.

Objectives of the study:

❖ To explore implications of demographic variations on Conflict Management styles of virtual team members.

❖ To identify predominant conflict management styles prevalent in virtual teams.

Hypothesis:

❖ (H 1) Difference in age does not influence Conflict Management Behaviour of virtual team members.

❖ (H 2) Male and female respondents will not differ in their styles of Conflict Management by virtue of their sex.

❖ (H 3) Years of Virtual Team Experience does not influence CMB of its members.

❖ (H 4) Predominant Conflict management styles would not exist to deal with conflicts.

Methodology:

Data was collected from 41 respondents who were part of Virtual Team, using a Conflict Management Behaviour Tool. Perceptions of conflict management behaviors were measured at the individual level because they represent the subjective viewpoint of each participant's expression of specific conflict management behaviors (Dennis & Kinney 1998). Nineteen measures for the five conflict management behaviors were adapted from Rahim (1983). The detailed questionnaire items are reported in the Appendix at the end of the paper. The participants had to answer all the 19 items measuring Behaviour styles for Conflict Management on a 5 point Likert Scale. The responses were scored and then subject to analysis using SPSS (version 14) to identify significant differences (if any) among respondents from virtual teams, based on demographic variations. The results were then tabulated and discussed here below.

RESULTS :

Table – I: Details of demographic variations of the sample.

Sl. No:	Demographic Variables	Classification of variables	N
1	Age	25-35	17
		35-45	24
2	Sex	Male	26
		Female	15
3	Years of experience in Virtual Team	0-5	19
		5-10	22

Table – II: Variants in Conflict Management (CM) Style of respondents based on age.

Dimensions of CM	Age (in years)	N	Mean	SD	t-value
Avoidance	25-35	17	6.05	3.28	1.54
	35-45	24	7.01	4.03	
Accommodation	25-35	17	9.03	2.23	.62
	35-45	24	10.81	1.89	
Competition	25-35	17	8.54	2.12	4.32**
	35-45	24	12.81	1.01	
Collaboration	25-35	17	10.71	4.31	2.03**
	35-45	24	4.97	5.02	
Compromise	25-35	17	5.02	1.03	1.18
	35-45	24	4.08	1.01	

Table – III: Influence of sex differences on Conflict Management Styles

Dimensions of CM	Sex	N	Mean	SD	t-value
Avoidance	Male	26	17.02	2.98	.81
	Female	15	12.03	3.68	
Accommodation	Male	26	4.91	2.16	2.86**
	Female	15	3.98	2.11	
Competition	Male	26	12.21	.90	.454
	Female	15	11.09	1.22	
Collaboration	Male	26	8.98	2.12	.62
	Female	15	9.12	1.85	
Compromise	Male	26	8.25	3.63	1.89*
	Female	15	5.92	2.51	

Table –IV: Variations in Conflict Management style based on years of experience in Virtual Teams (VT)

Dimensions of CM	Experience in VT	N	Mean	SD	t-value
Avoidance	0-5 years	16	6.28	3.81	3.05**
	5-10 years	25	8.39	3.99	
Accommodation	0-5 years	16	11.01	3.17	2.72**
	5-10 years	25	13.03	2.16	
Competition	0-5 years	16	5.05	3.81	.561
	5-10 years	25	5.03	3.19	
Collaboration	0-5 years	16	17.69	4.32	2.72**
	5-10 years	25	18.05	3.51	
Compromise	0-5 years	16	5.52	3.19	2.63**
	5-10 years	25	6.83	3.71	

DISCUSSION OF RESULTS:

Table – I shows the breakup of the sample based on the demographic variations of the participants of the study on various parameters.

Table – II highlights the difference in conflict management behaviour of the respondents with reference to the age of the respondents. It is evident that older employees were high on competition compared to their younger counterparts, indicating that they had a tendency to use power to win in a competitive situation, and use authority to get decisions made in their favor. They report being highly relied on their expertise and are firm in pursuing their side of the issue. This style of Conflict Management may not be very instrumental in effective functioning of virtual teams, as these teams are more performance oriented and are highly focused on accomplishing projects by set deadlines.

On the other hand, when it came to using collaboration as a Conflict Management Strategy, it is been observed in this study that the younger respondents used it more effectively than their senior counterparts. This

is a positive trend in that most virtual teams tend to work for a common goal and personal differences do not matter much to the members of virtual teams as there is the absence of personal presence in virtual environments. Keeping this in the back of mind, one can deduce that there is not much scope for personal grudge or ego issues to crop up, as interpersonal relationships is almost stands the last on the criteria of virtual teams. Therefore the hypothesis (H-1) stands rejected which states that Difference in age does not influence Conflict Management Behaviour of virtual team members.

Table III shows the difference in conflict management styles based on the sex of the respondents. It has been observed from this study that male team members have been more accommodative in their approach to their peers, by giving into their wishes and have also gone along with the suggestions of their team members. This could reduce the efficiency of the team as they may not articulate their view points on the feasibility of the project. On the other hand it has been noted that women respondents sought middle ground for breaking deadlocks and were compromising than being

accommodative. However, both Behaviour patterns appear similar on some grounds, but this study helps identify a thin line of difference between the two sexes.

Table IV shows Variations in Conflict Management style based on years of experience in Virtual Teams (VT). It is evident from the study that respondents who have had more years of experience virtual teams, tend to indulge in avoidance behaviour, in which they have kept disagreement to themselves, basically to avoid unpleasant exchanges with my team mates. Even though this does not matter in terms of working in a virtual environment, as you may not know the individual in person, however over a period of time, it still affects the psychology of virtual members, whereas respondents who were new to the field of virtual work, were not very avoidant and quiet open, on the feasibility of the project. It is also seen from the table that people with more years of experience in virtual team tend to be accommodative than the new incumbents, in that they give in to their team mates and just get along with their opinion at times. This could be a way of succumbing to the stress of having worked in Virtual set up for a long time.

Respondents with more years of virtual experience tend to be more collaborative than the new comers in the field, because of the practical know how of virtual team functionality. These set of respondents have perhaps understood that the teams are primarily task oriented and therefore know that what matters at the end of the day is output and performance. This awareness due to their experience over a period of time with virtual teams, helps them to focus on exchanging accurate information with the teammates and also bring out project related work concern in open so as to resolve them in the best possible way.

Respondents with more years of experience in virtual teams have also scored high on the compromising element of conflict handling Behaviour, perchance due to their exposure of having dealt with many dead locks during the working of virtual teams, they are focused on finding a middle course to resolve an impasse. The more the experience in dealing with virtual teams the more is the realization of importance of avoiding discomfort in unblocking the bottlenecks associated with the interpersonal yet virtual communications.

Major findings:

- Age of virtual team members certainly affects their conflict management styles.

- Competition is a predominant conflict management style of the comparatively older respondents in the study, whereas it was collaboration for the younger respondents.

- There are gender differences among men and women respondents while dealing with conflicts.

- Men are more accommodative whereas women are more compromising in their conflict management styles.

- Years of experience in virtual teams also significantly affects the conflict management styles of virtual team members.

- Fresh incumbents involve in less avoidant, less accommodative and less compromising styles of conflict managements compared to ones with more years of virtual team experience.

Limitations of the study:

This empirical paper has the basic inherent limitation with respect to sample size and has

thus perhaps failed to capture the true sense of Virtual team study. This curtails the possibility of generalizing the findings obtained thereof.

Scope for further research:

- The findings of this study can help identify appropriate conflict management styles in virtual teams.

- The current investigation can be used to understand the intricacies involved in exploring commitment and citizenship Behaviour.

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STUDY AND ANALYSIS OF THE JOB OPPORTUNITIES AND OTHER SOCIAL WELFARE ASPECTS WHICH HAVE MUCH IMPACT ON GROWTH AND PRODUCTIVITY OF INDUSTRY

Dr. Kishore Kumar Das*
Dr. S. Pruthviraja Pande**

Abstract:

This captioned Study was conducted on the Manufacturing Industries in Karnataka State. The analysis and the inferences comparatively among all these sectors have significant variance and the responses from the respondents is resulting to a derived and proved evidence to strengthen the statement that there is an Impact of the job opportunities and other social welfare significantly on the productivity and the growth in the manufacturing industries. The Study concludes inferring from the analysis of this Objective, with the conclusion which further justifies the title of this research study.

KEYWORDS : Human Resource Management, Quality, Productivity, Manufacturing Industries, Un-Organised Sector.

Introduction and Theoretical Background:

As the manufacturing Industries will have many stages, units and departments internally before its products are declared complete or before going for quality check or packing, there should be periodical job rotation in the manufacturing industries so that all will learn all the jobs. The job rotation is the movement of an employee from one job to another. That means the employees are given chances to learn and work by rotation on various jobs. This measure will relieve the employees from boredom, monotony and improves his skill, job enrichment and job satisfaction which ultimately impacts the growth and the profitability of the organisation as whole.

Different organisations will have their own and unique organisational culture, goals and objectives. The manufacturing sector especially should have technical and scientifically designed and developed job designs, plant and machinery which matches its production and also the goals both qualitatively and quantitatively. And further, while recruiting its workmen, the manufacturing industries as the only depend on men and materials for its organisational goals, it should take extra care while recruiting especially the skilled and high skilled employees.

But unfortunately, today many of the manufacturing industries including government organisations and public sector enterprises, I have found in my study that the organisational goals at times does not match with either design of the organisation or the labour under its establishment. In a few cases, when both of these aspects are taken care, the supervisory staffs that are brought in based on either their education or influence does not match the organisational goals. Because they fail many times both to participate and motivate the work force for deriving the desired production or the target.

Any manufacturing industry, unless it is a production unit of indigenous proprietary products, generally it will have chain of activities or will have different stages, phases and internal units for its products to be completed before placing into the market. It is the common tendency that the people who are experts or well trained in operating one unit of the industry or a phase are tend to continue in the same unit till their retirement or transfers. This will have negative impact on the organisational goal in a long way. Because, other technicians or the employees will never

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get an opportunity to work with other units and the fellow who is expert in the same unit, as he also did not get an opportunity to work some other department or the unit will be totally unaware of other activity other than his own.

The job opportunity is differently called in different manufacturing units as "Office Order", "Job Rotation", "Change of Duty". This periodical rotation or change of job will create an opportunity to all the employees to learn all the jobs in turn so that, in the absence of anybody who is holding the expertise of a particular department or unit, the overall production of the Industry will not suffer. This will not only motivates the employees but it would also enhance their job satisfaction and job enrichment. It is the main objective and the duty of the supervisory Establishment of the management of the organisation to adopt and adhere this strictly to reach the organisational goals especially in the manufacturing industries. Therefore, by job opportunities, the workers learn to do all the different jobs, activities necessary for the manufacturing industries to reach their operational goals. Job opportunity is nothing but a diversity to learn new skills along with, change of job, environment, supervisors, co-workers, technology, relocation, which creates enthusiasm for learning and motivate the workers to higher performance.

As the human being is a psycho-social being, the social relations, social security and the social welfare especially in the manufacturing industries will play a major role on his performance ultimately which impacts the organisational goals impacting the growth and the productivity of the industry. The social security are the management's statutory obligations like, salary and wages paid, needs like medical, education, maternity needs, better and safer working conditions etc., In many manufacturing industries, even the job security provided by the management is considered as the social security as for as their guarantee for the employment is concerned. There are many legislations in India, which establishes and rules the social security especially in the manufacturing sectors like Worker's Compensation Act, ESIC Act, EPF Act, Minimum Wages Act, Etc.,

But the social welfare is the realm created between the workforce and the management which is strictly not laid down with its limitation and flexible to meet the social obligations of the employees. The social welfare is also the highest type of motivation which impacts the growth and productivity of any industry. Social welfare is a concept of the management in manufacturing industry, which is beneficiary to its employees while both in service and after retirement like housing, health benefits, recreation, canteen facilities, retirement benefits and other welfare programmes. These social welfare will not only boost up the employee morale, but it also provides qualitative work environment and work life with security to the employees against social risks like old age, illness and sudden death.

There are many social welfare schemes extended to the employees of the manufacturing industries like Employment Security, Health Protection, Old age and Retirement Benefits, Education for employees children, housing and pension facilities. And social welfare also covers, cultural and social activities, entertainment and participation activities etc., In social welfare schemes, individuals will be motivated to work efficiently and contribute to their maximum possible extent which ultimately derives their individual objectives to reach the organisational goals. Even though the employees are provided with Annual and periodical benefits like Increments, periodical wage revisions, the impact made by the social welfare by the management is tremendous compared to any other incentives or motivational benefits especially in the manufacturing Industries.

Methodology

The samples are drawn from the population of

different levels of employees differing in their age profile, gender, educational qualification, working status etc., which is heterogeneous in nature. For this purpose, the population was divided in to various homogeneous strata and from these strata, random samples of employee respondents have to be taken. Hence the

No. of Respondents from different types of Companies

Company Type	No. Of Industries	No. of Respondents
Government Companies	05	50
Public Sector Companies	10	100
Private Sector Companies	10	100
Total No. of Respondents	**25**	**250**

respondents is categorized as under:

The data collected has been tabulated and analysed to arrive at suitable inferences in this chapter. Statistical tools such as tabulation & diagrammatic/graphical presentation of the data collected, and analytical tools like ratios, percentages are used in this Study. Graphical representation of data has been carried out with the help of MS-EXCEL software. Since the Study has more than 50 variables to be covered, these are grouped in to several Factors and this has been achieved with the help of Factor Analysis using SPSS software. This software programme is extensively used to draw various bi-variate frequency distributions involving two variables & correlation coefficients between related variables.

HYPOTHESIS

KMO and Bartlett's Test: The KMO statistic tests whether the partial correlations among

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.690
Bartlett's Test of Sphericity	Approx. Chi-Square	5040.348
	df	741
	Sig.	.000

variables are small. It should be greater than 0.6

for a satisfactory factor analysis to proceed.

Large values for the KMO measure indicate that the data collected for factor analysis is adequate. We can see from the table above that KMO measure of sampling adequacy is 0.661. Another indicator of the strength of the relationship among variables is Bartlett's test of sphericity. Bartlett's test of sphericity is used to test the null hypothesis that the variables in the population correlation matrix are uncorrelated. The observed significance level is 0.000. So, at 5% level of significance the p-value is small enough to reject the null hypothesis that the population correlation matrix is an identity matrix. Thus there is adequate correlation among the variables to do a factor analysis. It is concluded that the strength of the relationship among variables is strong.

The Hypothesis Testing is carried out by using Analysis of Variance procedures & Levene's Statistic. The study of the association between related attributes is analysed with the help of the Kendall Tau's Correlation Coefficients.

In this Case Study, various hypotheses are also tested with the help of the Analysis of Variance & Levene's test procedure. The SPSS software has been used in testing the following hypotheses:–

1. Periodicity and Importance of training

provided has no impact on growth and productivity of industry due to non performance of human resources.

2. Morality, Growth & profitability of firm have no impact on growth and productivity of industry due to non performance of human resources.

3. Affiliation to trade union and inefficacy of workforce has no impact on growth and productivity of industry due to non performance of human resources.

4. Job opportunities and other social welfare measures have no impact on growth and productivity of industry due to non performance of as part of growth and productivity of industry.

5. Technological aspects and motivation to work & self-realisation have no impact on growth and productivity due to non performance of human resources.

DATA ANALYSIS:

The better performance of human resources on growth and productivity basically depends in understanding the Job opportunities and other social welfare beings. In order to address this objective, the Study has identified the following five sub factors along that drive the forward in the organisations.

Results of the Factor Analysis of variables in the Study:

Factor analysis are of two forms; Exploratory factor analysis which tries to find the nature of the constructs influencing a set of responses and Confirmatory factor analysis which tests whether a specified set of constructs is influencing responses in a predicted way (DeCoster, 1998, p.1). The variables listed in the questionnaire to study the impact of the non-performing human resources on growth and productivity in manufacturing industries are large in number and need to be grouped in to a few factors. To achieve this, Factor Analysis technique with VARIMAX rotation is used

with the help of SPSS software. The results are tabulated in the following tables with Question Number in the Questionnaire and the related Question:

Factor Analysis of transnational and culture:

Before proceeding to factor analysis, a test known as KMO is being carried out to ensure on whether one can proceed with factor analysis. As a result, nine items were put into to KMO test and Bartlett's test for both desired and actual level of proficiency data.

The major components ruling **Job opportunities and other social welfare beings** are-

❖ The workforce is given opportunities & job rotations to learn other jobs as well.

❖ Special training are provided in the Manufacturing Industries to create awareness about profitability, productivity & growth to un-skilled & semi-skilled workforce.

❖ Performance and the Skill are the basic eligibilities with the character for the benefits and Promotions.

❖ The Importance of Training Cost of Workforce is very negligible compared to the Capital Investment in our Industry

❖ The basic needs like employee's family welfare, children's education, family health care etc are taken care to the full extent.

❖ If you are self realised? Are you punctual, performance & result oriented? Or much focused towards trade union activities, promotion, incentives & other benefits?

❖ The employees are provided with all labour security measures, health care, statutory obligations like ESI, EPF & Insurance

❖ You have Social, Cultural, Educational units and get-togethers organised in the

company.

❖ There is a practice of outsourcing or hiring workforce in your organisation because of non-performance of existing workforce
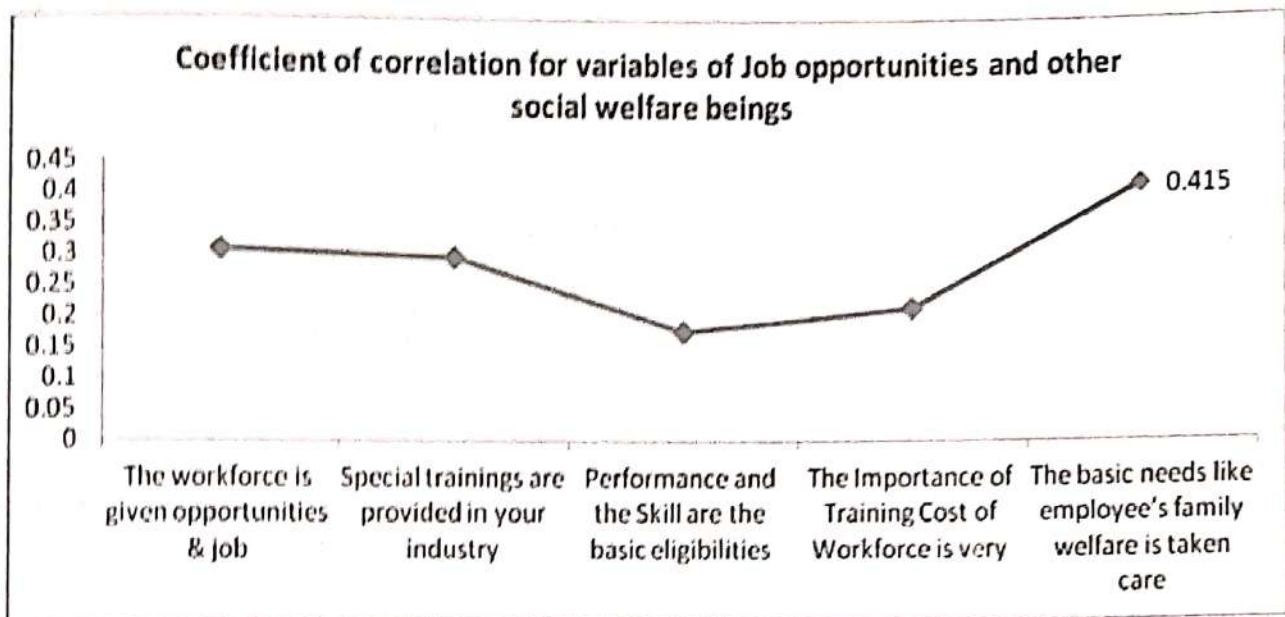
The correlation between the parameters of non performing HR resource with Job opportunities and other social welfare beings is tabulated as below:

Spearman's correlation coefficients for the variables of Factor "Job opportunities and other social welfare beings"

| Parameters of Impact on **Job opportunities and other social welfare beings** in the firm	1.0000
The workforce is given opportunities & job rotations to learn other jobs as well.	0.306
Special trainings are provided in your industry to create awareness about profitability, productivity & growth to un-skilled & semi-skilled workforce.	0.296
Performance and the Skill are the basic eligibilities with the character for the benefits and Promotions.	0.178
The Importance of Training Cost of Workforce is very negligible compared to the Capital Investment in our Industry	0.213
The basic needs like employee's family welfare, children's education, family health care etc are taken care to the full extent	0.415
If you are self realised? Are you punctual, performance & result oriented? Or much focused towards trade union activities, promotion, incentives & other benefits?	0.258
The employees are provided with all labour security measures, health care, statutory obligations like ESI, EPF & Insurance.	0.198
You have Social, Cultural, Educational units and get-togethers organised in the company	0.162
There a practice of outsourcing or hiring workforce in your organisation because of non-performance of existing workforce	0.245

All these correlation coefficients are depicted in the following graph:

Correlation Coefficients for the variables of "Job opportunities and other social welfare beings"

Coefficient of correlation for variables of Job opportunities and other social welfare beings

The first parameter of the Job opportunities and other social welfare beings is "The workforce is given opportunities & job rotations to learn other jobs as well". The correlation of this variable with the average rating score of the parameters of non performing Human resource is found to be 0.306. This implies that the association between these two variables can be explained to an extent of meagre 9.36 percent.

The parameter "Special trainings are provided in your industry to create awareness about profitability, productivity & growth to unskilled & semi-skilled workforce" has a positive correlation which is very moderate and also to an extent of 8.76 percent with the average rating score of the parameters of non performing Human resource of growth and productivity.

Coefficient of correlation for variables of Job opportunities and other social welfare beings
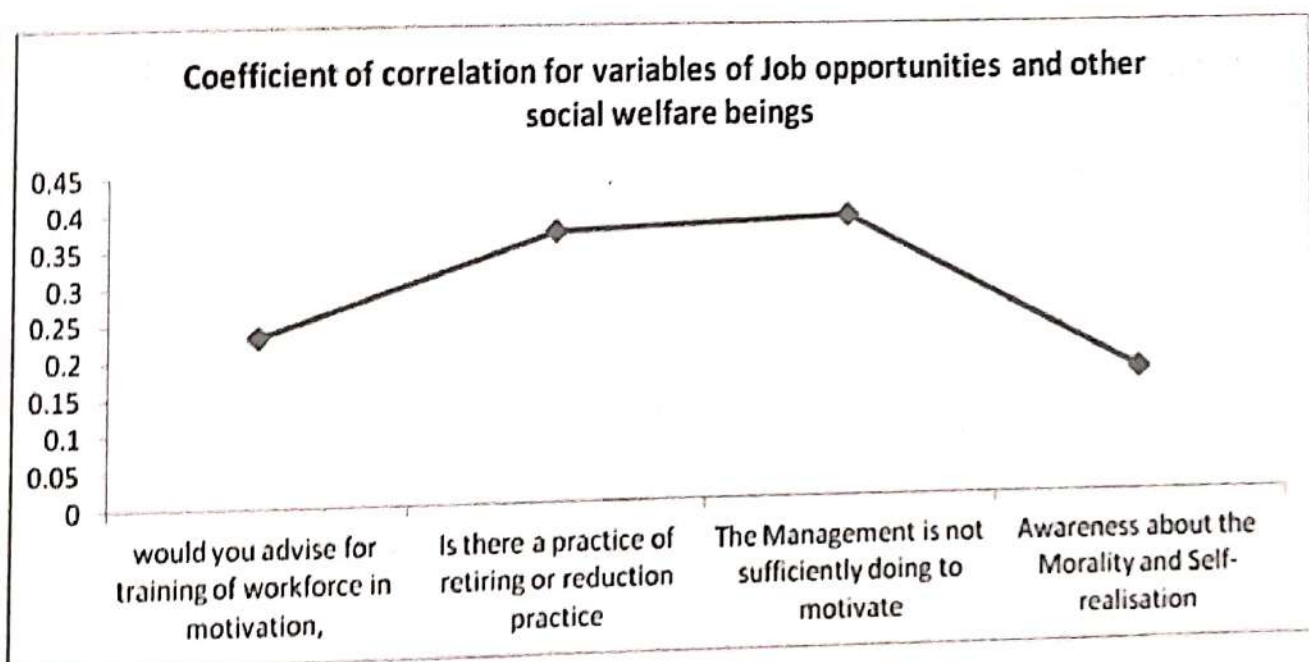
From the Figure, the parameter "Performance and the Skill are the basic eligibilities with the character for the benefits and Promotions" has a very low degree of positive association with the average rating score of the parameters of non performing human resource on growth and productivity to an extent of 3.16 percent. There is a positive and low degree of correlation of the parameter "The Importance of Training Cost of Workforce is very negligible compared to the Capital Investment in our Industry" with the average rating score of the parameters of non performing Human resource of growth and productivity and is found to be 5.33 percent.

There is 17.22 percent of positive degree of association between the "The basic needs like employee's family welfare, children's education, family health care etc are taken care to the full extent" and the average rating scores of the parameters of non performing Human resource of growth and productivity. Furthermore, a very low degree 6.65 percent of association is between "Are you punctual, performance & result oriented? Or much focused towards trade union activities, promotion, incentives & other benefits?" and a positive association of 3.92 between "The employees are provided with all labour security measures, health care, statutory obligations like ESI, EPF & Insurance" and the average rating scores of the parameters of non performing Human resource of growth and productivity.

Similarly, the degrees of association between "You have Social, Cultural, Educational units and get-togethers organised in the company" is to the extent of 2.62 percent and between "There a practice of outsourcing or hiring workforce in your organisation" and the average rating scores of the parameters of non performing Human resource of growth and productivity is about six percent.

Inference: From the above analysis, the important element of success in non performance of human resources on growth and productivity in the organisation by considering the factor is found. "The basic needs like employee's family welfare, children's education" and "family health care etc are taken care to the full extent." with the correlation coefficient being highest at 0.415. This shows that it is important for any organisation to take care of basic social needs of the employees that would make the path of success which enhances the degree of good human resources in the organisations. It if opinioned and found that the Welfare measures and the work hazards, healthcare of the workforce, especially in the manufacturing industries will not only motivates the Human Resources towards better performance and their participation, but it would also impacts on the overall growth and the profitability of the industry itself.

Graphical Representation of variables of Job opportunities and other social welfare beings:
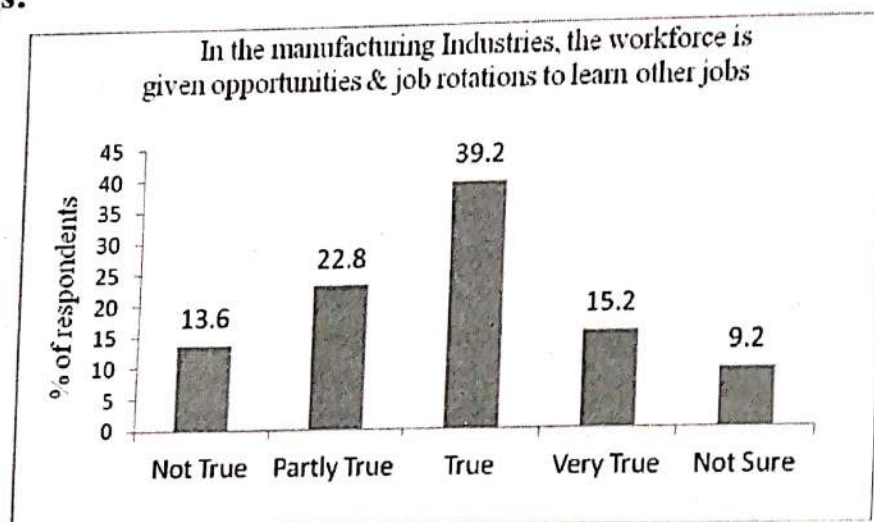
In the manufacturing Industries, the workforce is given opportunities & job rotations to learn other jobs

From the Figure, it is observed that about 39 percent of respondents are truly agreeing and another 15 percent of them strongly agreeing (very true) that the workforce is given opportunities and job rotations to learn other jobs. On the contrary, about 14 percent and 23 percent of respondents strongly disagreeing (not true) and partially agreeing (partly true) that workforce is not given opportunities and job rotations.

About nine percent did not give their consent on this aspect. It is opinioned that more than 45 percent of the respondents are not supporting the statement which means that there is negligence in the manufacturing industries about the job opportunities and the job rotations to the workforce including those 9 percent who are not sure of the statement.

Special trainings are provided in your industry about profitability, productivity & growth to workforce
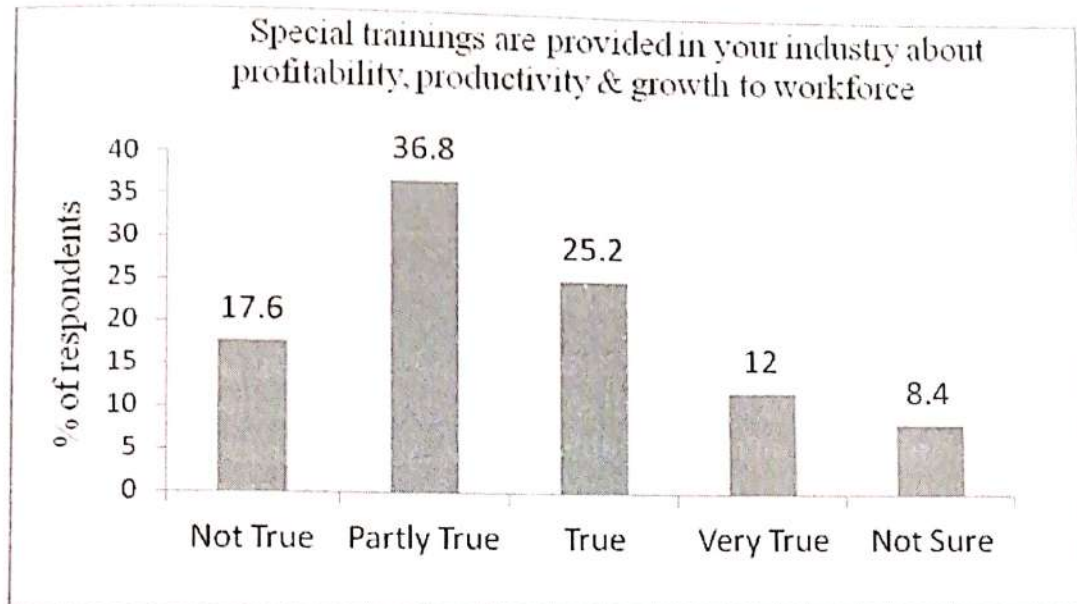
From the Figure, it is observed that about 25 percent of respondents are truly agreeing and another 12 percent of them strongly agreeing (very true) that Management has provided profitability, productivity and growth to workforce. On the contrary, about 37 percent and 18 percent of respondents strongly disagreeing (not true) and partially agreeing (partly true) that management that special trainings are provided on profitability and productivity. About eight percent did not give their consent on this aspect.

Performance and the Skill are the basic eligibilities with the character for the benefits and Promotions
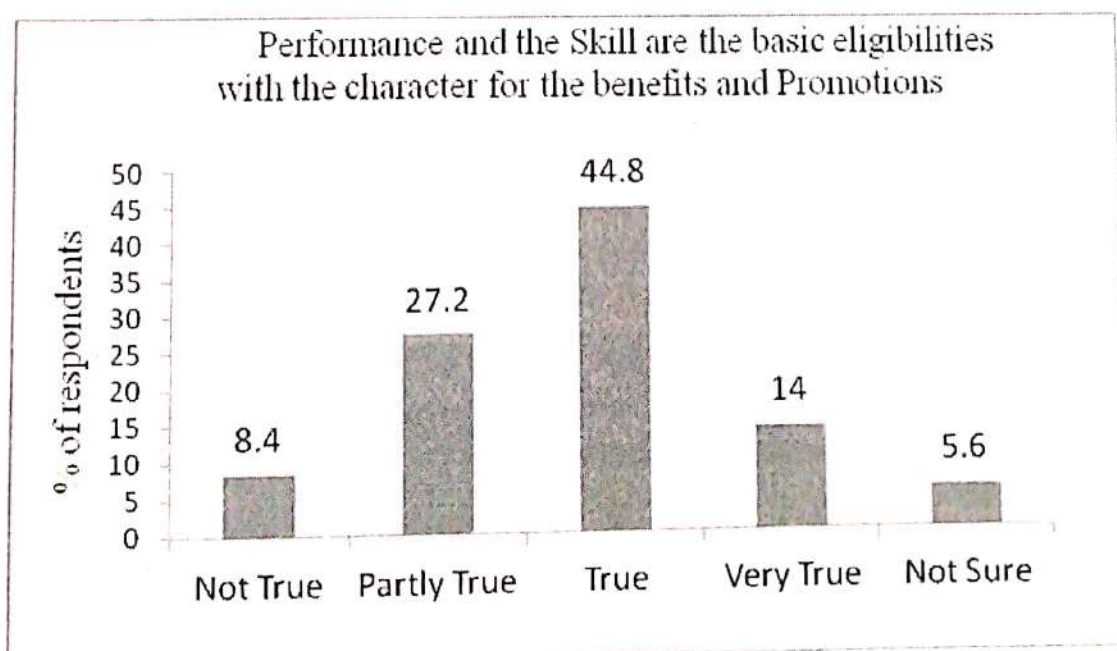
From the Figure, it is observed that about 45 percent of respondents are truly agreeing and another 14 percent of them strongly agreeing (very true) that performance and skill are the basic eligibilities with the character for the benefit of promotions. On the contrary, about eight percent and 28 percent of respondents strongly disagreeing (not true) and partially agreeing (partly true) that it is not essential. About eight percent did not give their consent on this aspect.

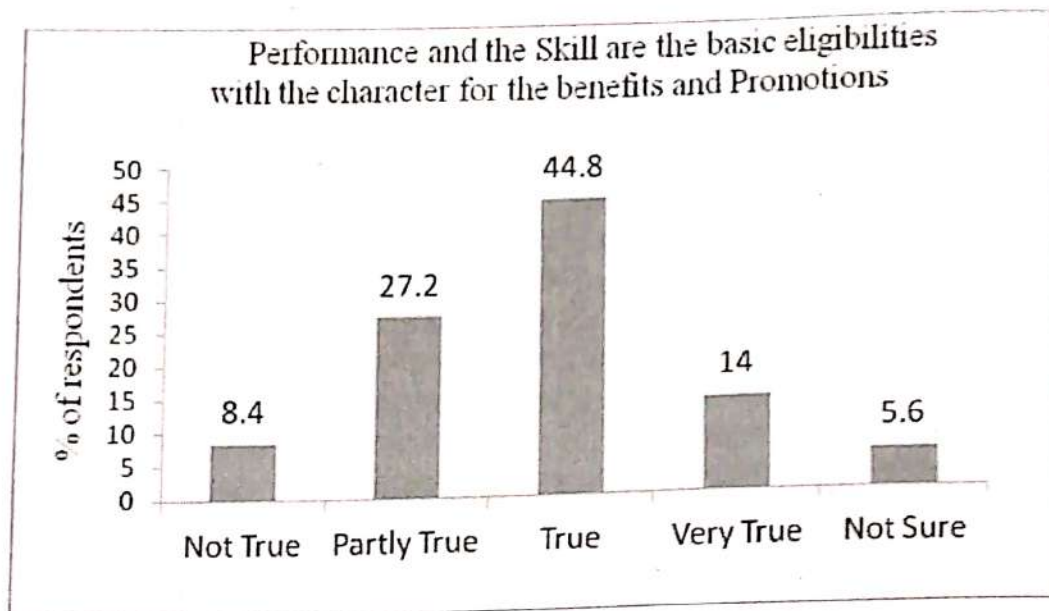Performance and the Skill are the basic eligibilities with the character for the benefits and Promotions

From the Figure, it is observed that about 46 percent of respondents are truly agreeing and another 16 percent of them strongly agreeing (very true) that Quantum of training cost is very negligible compared to capital investment. On the contrary, about 6 percent and 14 percent of respondents strongly disagreeing (not true) and partially agreeing (partly true) that Quantum of training cost is very negligible compared to capital investment. About eight percent did not give their consent on this aspect.

Quantum of Training Cost of Workforce is very negligible compared to Capital Investment in your industry
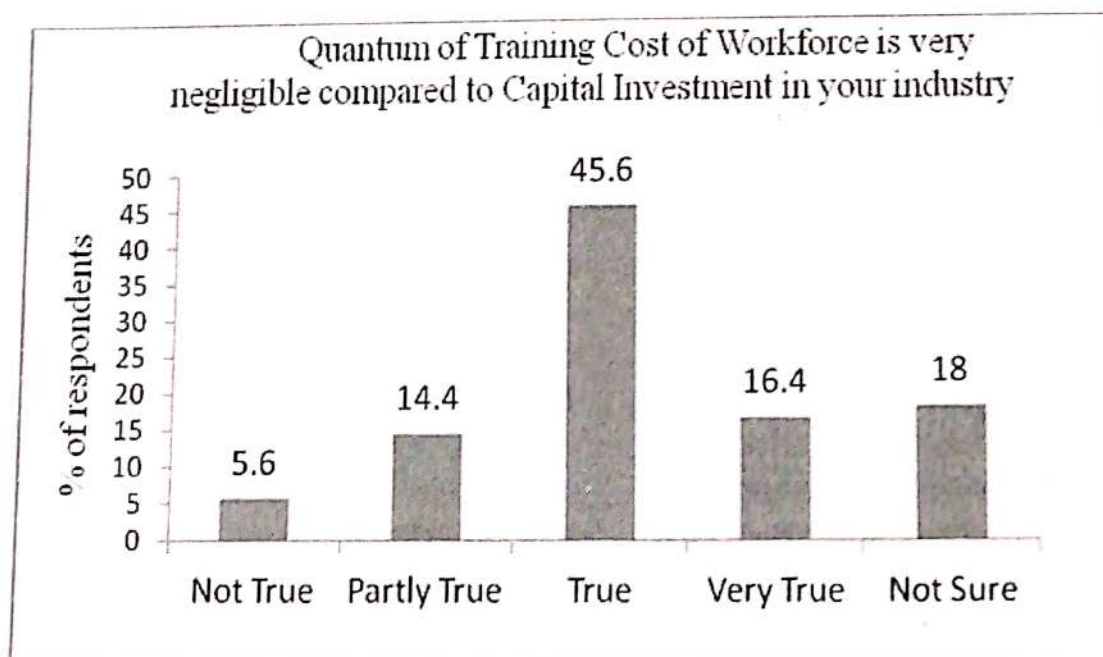
From the Figure, it is observed that about 46 percent of respondents are truly agreeing and another 16 percent of them strongly agreeing (very true) that Quantum of training cost is very negligible compared to capital investment. On the contrary, about 6 percent and 14 percent of respondents strongly disagreeing (not true) and partially agreeing (partly true) that Quantum of training cost is very negligible compared to capital investment. About eight percent did not give their consent on this aspect.

Basic needs like employee's family welfare, children's education, health care are taken tofull extent

From the Figure, it is observed that about 39 percent of respondents are truly agreeing and another eight percent of them strongly agreeing (very true) that basic needs like employee's family welfare, children education, health care etc., are very well taken care by the company. On the contrary, about 21 percent and 30 percent of respondents strongly disagreeing (not true) and partially agreeing (partly true) that basic needs like employee's family welfare, children education, health care etc., is very well taken care by the company.

Are you punctual, performance & result oriented? Or much focused towards trade union activities?
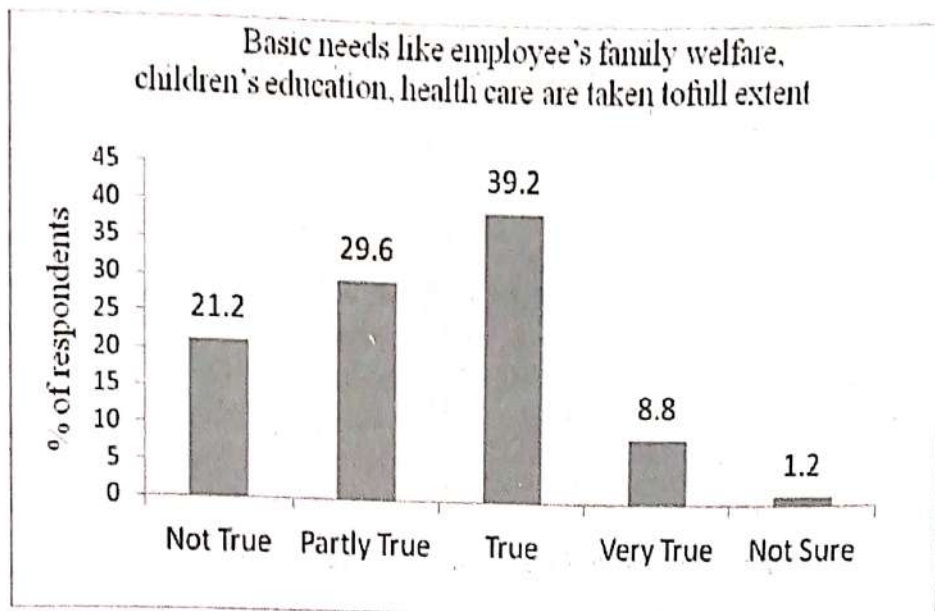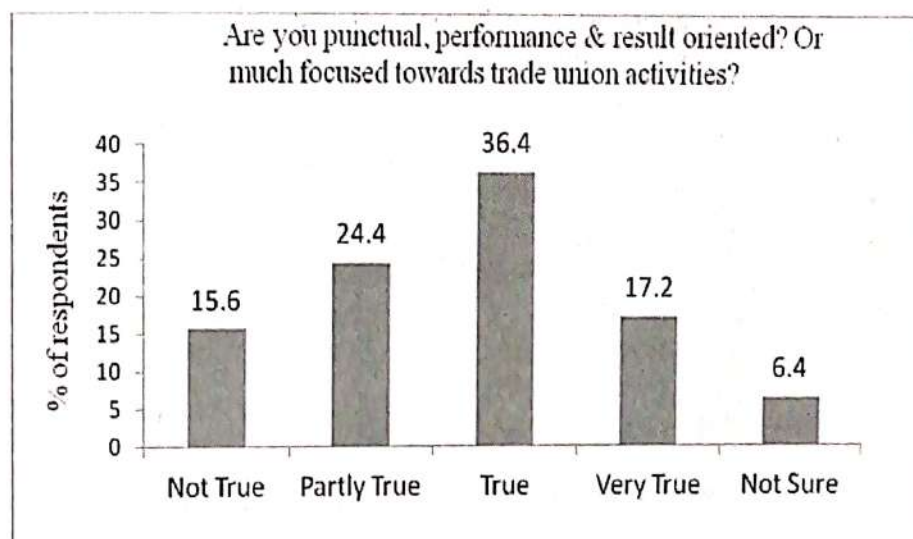
From the Figure, it is observed that about 36 percent of respondents are truly agreeing and another 17 percent of them strongly agreeing (very true) that they punctual, performance and result oriented and not much focused on other activities such as trade unions and non performing activities. On the contrary, about 16 percent and 24 percent of respondents strongly disagreeing (not true) and partially agreeing (partly true) that certain workforce are not punctual and are much focused to non performing activities.

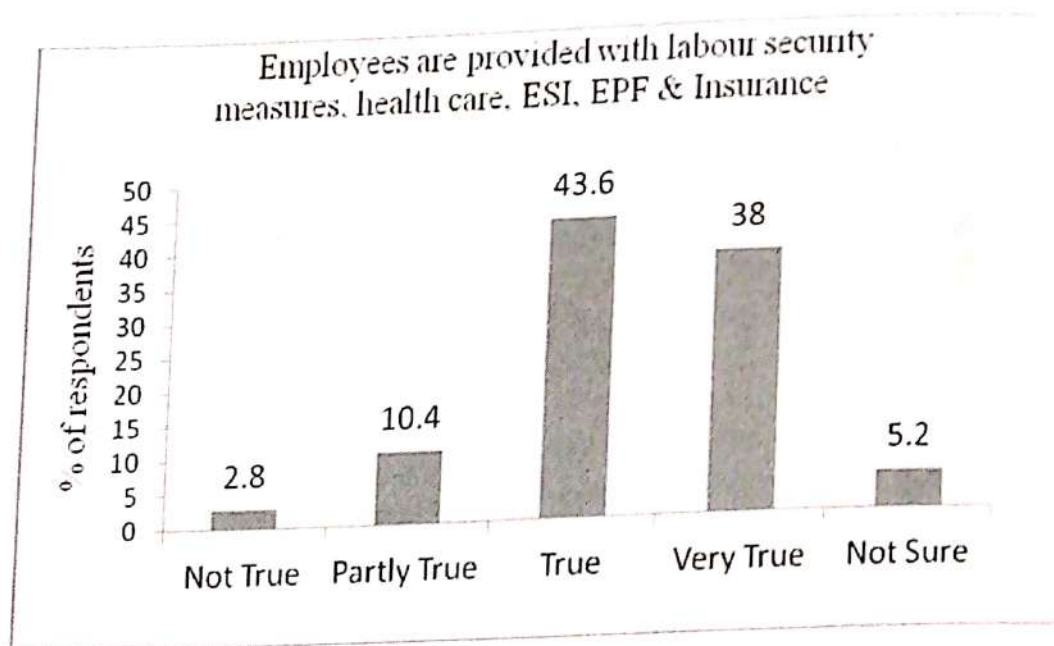Employees are provided with labour security measures, health care, ESI, EPF & Insurance

From the Figure, it is observed that about 44 percent of respondents are truly agreeing and another 38 percent of them strongly agreeing (very true) that employees are provided with labour security measures, health care, ESI, EPF and insurance by their respective organisations. On the contrary, a mere three percent and 10 percent of respondents strongly disagreeing (not true) and partially agreeing (partly true) that these social security measures are not strictly followed in their company.
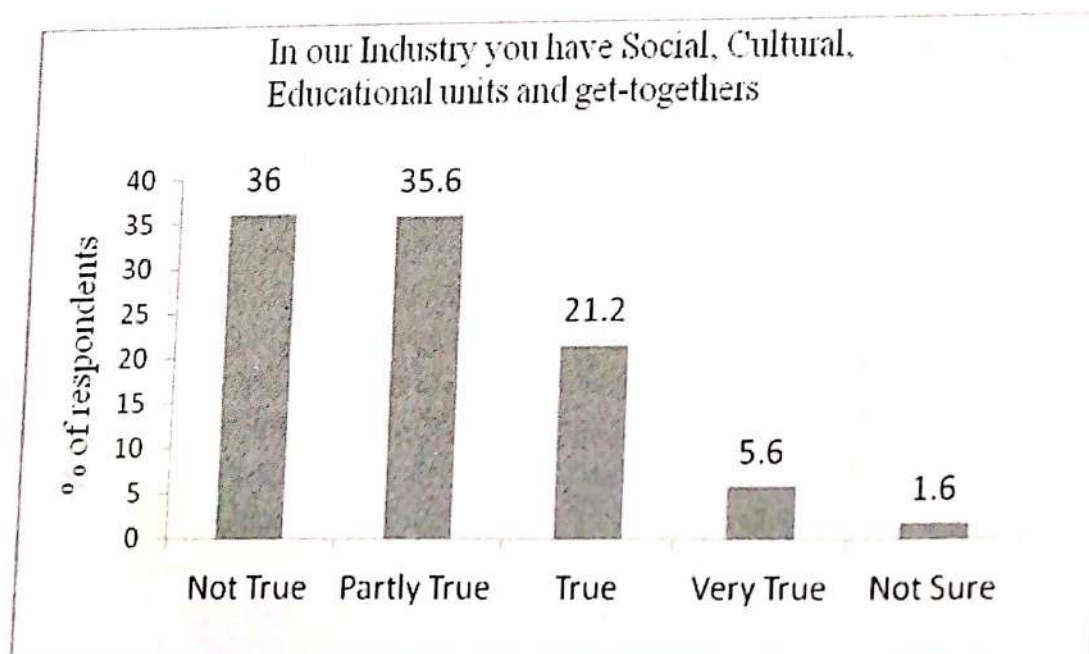
In our Industry you have Social, Cultural, Educational units and get-togethers

From the Figure, it is observed that about 36 percent of respondents are strongly disagreeing and another 36 percent of them partly agreeing (partly true) that there is space for social gatherings and cultural event based activities to be performed. On the contrary, about 22 percent and six percent of respondents truly agreeing (true) and strongly agreeing (very true) that management there is no scope for basic needs like employee's family welfare, children education, health care etc., is very well taken care by the company.


Is there a practice of outsourcing or hiring workforce in your organisation because of non-performance of existing workforce?
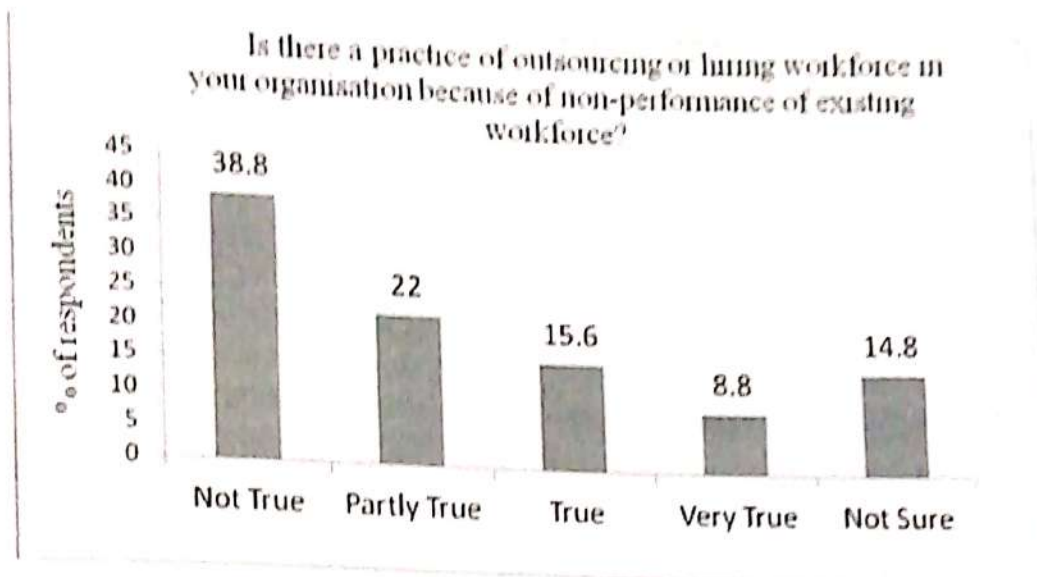
From the Figure, it is observed that about 39 percent of respondents are strongly disagreeing and another 22 percent of them partly agreeing (partly true) that there is a practice of outsourcing or hiring the workforce in their respective companies because of non performance of existing workforce in terms of delivering the goods. On the contrary, about 16 percent and nine percent of respondents truly agreeing (true) and strongly agreeing (very true) that management sometimes do outsource or hire of workforce because of non performance of existing workforce.

Conclusion

It is found and derived in the study that the better job rotation and opportunities would affect the job efficiency and learning process in the manufacturing industries. Better working and living conditions would always yield better results as the employees those who are non-performers would be motivated to put in their hard work. It is found in the study as many have opinioned that the Job opportunities and other social welfare beings have much impact on growth and productivity of industry. Out of the total respondents maximum have opinioned that the social welfare measures along with the job opportunities especially in the manufacturing industries will impact the productivity of the industry. It is also opinioned and found that those few non-performing human resources would also significantly impacts the profitability and the growth in the manufacturing sector. Hence, the study titled "The Study and the Analysis of the Job Opportunities and other Social Welfare aspects have much impact on the Growth and Productivity in the Manufacturing Industry" is evidently found and also justified by the current study.

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CONSUMER STYLE INVENTORY – ASSESSING THE DECISION MAKING STYLE OF YOUNG INDIAN, A STUDY ON MOBILE PHONE

Shampa Nandi*

Abstract :

Consumer Style Inventory - assessing the decision making style of young Indians: a study on mobile phones

In less than 15 years, the mobile phone has become an essential part of our daily lives. It is no longer a luxury item and has become one of the most commonly used daily consumer goods throughout the world. Indian Mobile market is one of the fastest growing markets and is forecasted to reach 868.47 million users by 2013. A large proportion of Indian population is young and they are a very important market to business today because of their large spending power. They have a very unique behavior to the older generations with research showing that a lot of what they purchase represents their self-expression. Mobile devices are a part of their personal selves and a vital component which connects them with the world and people around them. The present study has tried to focus on the decision-making styles of the young adult consumers with a reference of mobile phone buying and to create decision-making profile of young Indian adults. The research has made use of Sproles and Kendall's (1986) consumer style inventory and has attempted to examine the applicability in Indian context. The factor analysis, the principle components method with Varimax rotation of factors, was performed to identify characteristics of consumer decision-making.

Key Words: Consumer decision-making, Consumer Style Inventory (CSI), Young adult Consumers, Mobile Phone.

Introduction :

Telecom industry in India has seen major transformation since introduction of mobile services around 1995. Telephone ownership, once was considered as a luxury, has become necessity of daily life. Multiple factors like introduction of mobile telephony, rising disposable income, easy affordable SIM registration, reduced air time charges and increasing versatility of mobile handsets have contributed to growth in telecom sector in India. Increased penetration of cellular services throughout length and breadth of India has also resulted into steep rise in the demand of mobile handsets and it has created huge handset market. This thriving mobile handset market is attracting many players. Increasing number of players has resulted into cut-throat competition in the sector. Today there are many companies in the market like Nokia, Sony Ericsson, Samsung, LG etc. Some local companies like Micromax, Spice, Lemon, Karbonn, etc. have also entered in the market and attained respectable market position. In such competitive markets each marketer is under increasing pressure to introduce innovative products in the markets.

India is home to 1.237 billion people, out of which 50% of the population are in the age bracket of 0-25 years and 65% are in the age bracket of 0-35 years. Since a huge number of populations is in the young age group, it is an attractive market. The purchasing power of youth has significantly increased, both, in terms of salary and pocket money. Salaries in India rose by 14.4 per cent in 2006 and by 15.1 percent in 2007 as surveyed by Hewitt Associates. An ASSOCHAM survey revealed that the average monthly allowance of urban children in the age group of 10-17 years has

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gone up from Rs 300 in 1998 to Rs 1,300 in 2008. This youth segment of Indian is very attractive due to its size, increasing spending power, large exposure to media and their vast knowledge and adaptability of technology. Young adult consumers are very much drawn in with current trends as compared to other age groups. Typically, most young adult consumers are trendsetters among themselves as well as playing a role as trendsetters to the population at large. While mobile phones are primarily acquired due to new features including color display and polyphonic ring tones, some consumers bought new phones in order to get an innovator and/or opinion leader status. Young people are adopting a lifestyle rather than a technology perspective: they want technology to add value to their lifestyles, satisfy their social and leisure needs and reinforce their group identity. They assess technology according to their needs rather than as a task-oriented artifact.

Basic purpose for using a mobile phone by the young population –

- Fashion/ Status
- Identity/Image
- Necessity in modern times
- Social interaction
- Entertainment
- Safety/ Security
- Cost efficiency
- Lifestyle organizer
- Basic Functionality (call, sms)
- Mobile-Commerce (GPS, Banking services, email, purchase online etc)

Consumer Decision-making Style:

Decision-making style refers to a mental orientation describing how a consumer makes choices. Sproles and Kendall (1986) have defined it as "a mental orientation characterising a consumer's approach to making choices." As it has cognitive and affective characteristics, it is a basic consumer personality (Sproles and Kendall 1986). According to Sproles and Kendall (1986), the research on consumer-decision making styles can be categorized into three main approaches: the psychographic/life style approach, the consumer typology approach, and the consumer characteristics approach. According to the researchers among these three approaches, the consumer characteristics approach seemed to be the most powerful and explanatory as it focused on the mental orientation of consumers in making decisions. Thus, decision-making styles can be determined by identifying the consumer's general orientations towards shopping and buying.

Literature Review:

Sproles (1985) as well as Sproles and Kendall (1986) used data from samples of young consumers in the United States to measure basic characteristics of consumer decision-making styles. They developed and validated a Consumer Styles Inventory (CSI) for this purpose. The above study tried to make a segregation among different university students based on their purchase decision in the following groups -- Brand conscious, Perfectionist, Recreational-Shopping Conscious, Confused by Over choice, Time-Energy Conserving, Impulsive, Habitual, Brand Loyal, Price-Value Conscious.

Bordeau et al. (2002) have discussed about young people's motives to use any products. They also have hedonistic and utilitarian motives for using Internet and mobiles, considering them a source of information, communication, entertainment and an alternative shopping channel. Mobile technologies, particularly mobile phones and text messaging, have been widely adopted by young people and integrated into their everyday lives. To date there has been little description of the ways that young people are adopting and using mobile technologies and so

we have little understanding of the reasons for high levels of use, or the opportunities for designing new technologies that will further support young people's lifestyles. Young people are more favourably disposed towards change and use the new technologies such as the mobile phone from a very early age.

According to Grant and Waite (2003), young-adult consumers provide an interesting topic for the consumer research for at least four reasons. First, at the period of transition from adolescence to early adulthood, the young people seek to establish their own individual personas and form behaviour patterns, attitudes, and values, hence their own consumption patterns. They make purchases to define themselves and to create an identity of their own making. This idea was generated and proven by Holbrook and Schindler (1989). Secondly, young people are able to influence the purchase and decision-making of others . Thirdly, they act as a change agent by influencing society and culture (Leslie, Sparling and Owen 2001). And finally, from a marketing perspective, young adults are recognised as a specialised market segment that forms a powerful consumer spending group in their own way (Moschis 1987; Grant and Waite 2003).

An in depth study of the demographics on consumer mobile buying behavior was done by Bigne, E. et al (2005) and it identified the variables influencing purchase behavior. Young people spend a large amount of their day to day lives with their mobile phone apart from the educational, official or functional purpose. They are tech savvy, innovative and love to shop through online either through laptop or mobile phones. The attitude towards innovation and these differentiated needs are one of the main reasons for the growth in personal computers and mobiles in households. For these reasons, the 'youth market' has become extremely attractive to mobile phone marketers, and mobile phones are increasingly seen as an exciting medium for targeting and interacting with young people.

On this basis the article "Factors Affecting Consumer Choice of Mobile Phones: Two Studies from Finland" done by Karjaluoto, H. et al (2005) it was found that the development of mobile phones is leading the market into a situation where the basic need, communication, is actually broadened to new means of interaction and personal digital assistance. In fact, mobile phone evolution will eventually lead to the convergence of mobile phones and digital personal assistants (PDAs).With the use of a series of focus group interviews (Study 1) with 79 graduate students followed by a survey (Study 2) of 196 respondents, it was found that although the choice of a mobile phone is a subjective choice situation, there are some general factors that seem to guide the choices. The two studies show that while technical problems are the basic reason to change mobile phone among students; price, brand, interface, and properties are the most influential factors affecting the actual choice between brands.

Usage patterns of and attitude about cell phones among university students in a mature market(USA) and a rapidly growing market (India) was investigated and revealed that Indian students use mobile phones differently from their American counterparts (Chakrabarty, S. 2006).

Another study done by Das, B., Mohanthy, S., (2007) suggested that age plays a major role in the purchase decision, while buying a product or service. An intelligent marketer should realize that the best results of a product or service necessarily differ according to the age of the customer. The work of the marketer would be easier if he analyzes the minds of consumers and makes sure what exactly the members of a particular group want. Youth in the age group of 20-30 years use cell phones to the maximum followed by just the elderly group 30-40 years. The youngest and the oldest groups have the least choices for the cell phones.

Subhash Jha (2008) has given a snapshot of how frequently young people use their mobile phones for several embodied functions of the

cell phones. His study was done on the college goers aged between 20 and 29 and shaded light on how gender, monthly voucher amount and years of owning mobile phones influence the usage pattern of this device. The findings show that there is a significant difference in the usage pattern of mobile phones because of these three variables.

Singh, J., & Goyal, B. B (2009) has enlightened in the article "Mobile Handset Buying Behavior of Different Age and Gender Groups," that the gender differences were very conspicuous in 'core technical features' and 'brand'. This is probably due to less familiarity of female consumers with core technical aspects. Though less significant, yet gender differences also emerged in 'value added features' and 'physical appearance'. The female consumers probably due to their overwhelming orientation to 'physical appearance' of handset do not find 'brand' as much important as men do. Users of age group of 18-30 years are less price sensitive than consumers of other groups; rather they consider 'physical appearance', 'brand', 'value added features', and 'core technical features' more important than users of any other age groups. This may be due to the reason that majority of Indian youth seeks excitement in the products and also they are more exposed to new technological developments than other age groups particularly mature ones.

B Rajashekhar, N Udaya Bhaskar (2009) have tried to measure the celebrity impact on the buying decision of mobile phones. There are many variables that affect consumer behavior, such as age, income, gender, geography and personality. The attitude of the consumer's changes with demographics in an urban area while demographics factors do not have any impact on a semi-urban area.

Maznah Wan Omar et al. (2009) in their paper titled "Decision Orientations towards Shopping and Buying among Young-Adult Malays in the Universities" have attempted to measure the "general orientations toward shopping and buying" and samples from undergraduate students from several universities in the northern region of West Malaysia were used. Decision-making styles of young adult Malay consumers from five universities show similarities and the students are Brand Conscious and Price Equals Quality consumers. Respondents who came from large universities were all confused by too many choices of product available to them. On the other hand, students whose university was situated far from big/large town like University Utara Malaysia and UiTM Perlis indicates that they were Recreational-Shopping conscious consumers.

The implications obtained from the findings were that socialization and environment do shape the purchasing patterns of consumers.

Mishra, A. A., (2010) has focused in his paper "Consumer Decision-Making Styles and Young-Adult Consumers: An Indian Exploration," on the decision-making styles of young-adult consumers so as to provide information to marketers interested in the decision-making profile of Indian consumers and thus enabling them to build their marketing efforts accordingly. The study has confirmed the applicability of the original US characteristics as well as two new traits specific to the Indian context.

Need & relevance of the study:

The learning processes that every consumer goes through would be the determining factors to the decisions a consumer makes when one is purchasing a product or paying for a service. As the number of product increases and the variety of goods available in the stores this helps to broaden-up consumer choices. Similarly, with the availability of multi-component products and electronic purchasing capabilities not only it has broadened the sphere of consumer choice, it also adds complication in making a purchase decision. To have a sustainable growth in the present competitive market, marketer must know who their customers are, what they think and how they feel and why they buy a particular brand of mobile phone than any other.

Research problem:

Normally researchers across various countries feel that decision-making styles can vary across cultures. Thus Consumer Style Inventory needs some modifications depending on the culture of different countries. The role of the young especially in consumer decision making should be defined and examined for several reasons. Young people are eager to consume, are conscious of their experience (Sproles and Kendall 1986). Young consumers are recognized as a specialized market segment for a variety of goods and services. The young within the family often influence family purchasing decisions. Though the youth market is lucrative but it is also complex and must be examined carefully. Therefore the present study has made an effort to understand consumer buying behaviour through one aspect—their decision making style.

Objectives of the study:

- To get an insight into the decision making styles of young adult Indian consumers with reference to mobile phone.

- A basic comparison of Sporles & Kendall's (1986) model of "Mental orientation characterizing a consumer's approach to making choices" in Indian context.

This study provides information to marketers interested in the decision-making profile of Indian consumers and thus enabling them to construct their marketing efforts accordingly.

Research Methodology:

Sampling Design

A sample of young-adult between the age group of 18-30 years is considered in this research study. Two primary categories of young people considered are working youth and non-working youth. For non-working group, students' samples picked from the Management Departments from different colleges of Bangalore like, Christ University, Amity School of Business, Welingkar School of Management, RJS Institute of Management Studies, Oxford College of Management. To choose the sample for this study, convenience sampling method was used.

For working category, employees of various reputed organisations are surveyed keeping in mind the age group which is between 18-30 years. The name of the organisations surveyed are HCL Technologies, Wells Fargo Bank, Deloitte, TCS, Verse Innovation, IKYA and some others organizations in Bangalore.

Sample size:

A total of 375 respondents were surveyed with a structured questionnaire but few of them rejected because of incompleteness. Mostly students' form MBA and Final Semester BBM were included in the survey. First and second semester BBM students were also asked to fill up the questionnaire with close supervision. The data used in this study were collected in three months period from July to September 2013. Students from different types of Institutes, and employees from various organisations are chosen as the sample should represent young population of different financial, educational and social backgrounds. Respondents were encouraged to give their honest answers with simple self explanatory questions.

Data collection Tool:

A structured questionnaire with 25 different statements with Likert scaled 1 (strongly disagree) to 5 (strongly agree), was used for the purpose of identifying the different styles of decision making. For reliability of the test a pilot study was conducted and Cronbach Alpha was measured.

Method of Analyzing Data:

For analyzing data, factor analysis, the principle components method with Varimax rotation of factors, was performed to identify characteristics of consumer decision-making.

Data Analysis and Results:

Scale: Reliability Analysis with a pilot study of 35 respondents

Reliability Statistics

Cronbach's Alpha	No of Items
0.763	35

The overall statistical results for reliability analysis (overall alpha) of this dimension give a value of 0.763 which portrays satisfactory level of internal consistency among the responses in this dimension.

Demographic Characteristics of Respondents

Group	Respondents' Characteristics	Number of Respondents	Percentage
Gender	Male	212	59.7
	Female	143	40.3
Age in years	18-20	85	23.9
	21-23	146	41.1
	24-26	83	23.4
	27-30	41	11.5
Education(last degree completed)	PUCII	78	22
	Graduation	190	53.5
	Post Graduation	80	22.5
	Others	7	2
Occupation	Student	216	60.8
	Service	112	31.7
	Business	3	0.8
	Homemaker	3	0.8
	Others	21	5.9
Monthly Household Income (in Rs)	Below 15,000	77	21.7
	15001-30,000	121	34.1
	30,001-45000	54	15.2
	45,001-60,000	26	7.3
	Above 60,000	77	21.7
Financial Independent or not	No	188	53
	Yes	167	47

Current Brand Owned by respondents:

Cureent brand
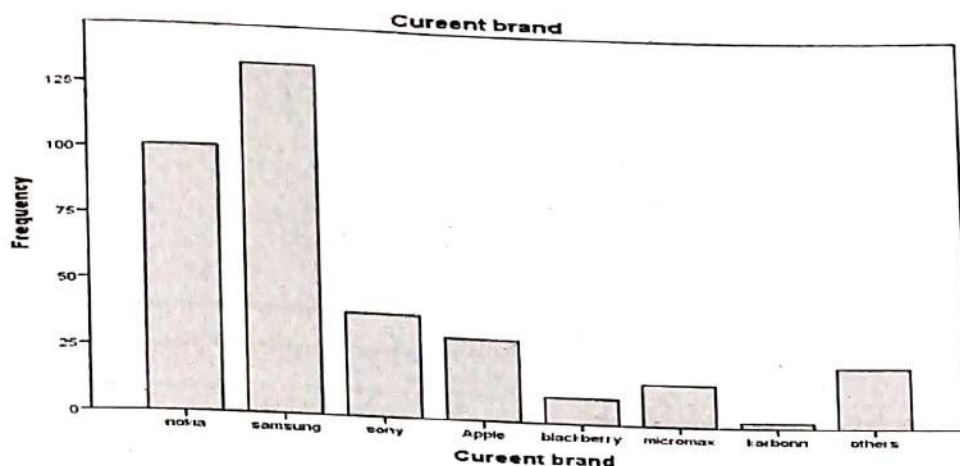
Most popular brand among young consumers are Samsung, followed by Nokia, Sony, Apple etc.

Price of the Mobile handset owned by the respondents:

Descriptive Statistics

	No.	Minimum (Rs)	Maximum (Rs)	Mean (Rs)	Std. Deviation (Rs)
Price	355	500	60000	14766.68	11815.949
Valid N (listwise)	355				

The penetration rate of mobile phone among youth is 100%, as all of the respondents possess a mobile handset. Therefore it is seen that mobile phone has become an essential commodity, especially in young generation. The price range of the handset is from Rs 500 – Rs 60,000.

Who Influence in buying decision
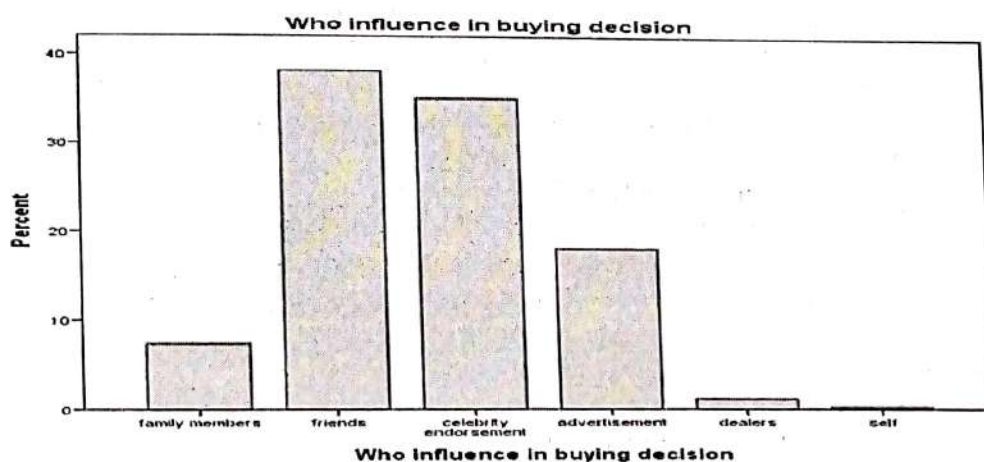
Surprisingly most important influencing factor for young population is friend, and even advertisements endorsed by celebrities have a very good impact in the buying decision of young people.

Factor Analysis:

This mechanism is used to extract the components or the dimensions that each of the variables or questions is focusing at in order to confirm if it is in line with the predefined dimensions. It is also used to gauge the factor loadings for each of the variables or questions associated with each of the factors so that the factor loadings are multiplied with each of the variables for every respondents and the average to be taken for each dimension thus showcasing the true measure for each dimensions and ultimately the total construct.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.812
Bartlett's Test of Sphericity	Approx. Chi-Square	2583.543
	Df	300
	Sig.	0.000

The Kaiser-Meyer-Olkin Measure value of 0.812 showcases the strong sample adequacy depicting that the samples are sufficient and adequate in carrying out this mechanism. The high significance (since the significance value of .000 is less than 0.05 the accepted and benchmarked 5% significance level) propels that at least there is one component or factor that can be extracted.

Communalities

No.	Statements	Extraction
1	Using mobile phone to make calls(both STD & local) is cheaper than using landline	.707
2	It is easy to afford a cell phone than to acquire a landline service	.625
3	Easy and low cost SMS service is available in mobile phone	.517
4	Mobile phone is the basic priority in life.	.565
5	Having a mobile phone make me feel safe at any time	.545
6	I can communicate with my parents when I am out and they stop worrying about me.	.651
7	I can communicate with anybody in emergency	.686
8	Without mobile phone I feel out of the world	.631
9	If I miss my phone one day I feel handicapped	.698
10	With the mobile I can arrange any social get together at any time	.528
11	I always keep my phone on.	.308
12	For official purpose I always communicate with my mobile.	.420
13	I feel sad if I miss even one call.	.405
14	If you have a mobile phone you will never feel bored	.524
15	I use it for playing games, watching videos, or listening to music	.628
16	I use it for accessing internet and for m-services	.567
17	Carrying a latest handset model reflects who I am	.564
18	It's fun to have a mobile phone	.432
19	To be successful in the world today you definitely need a mobile phone	.483
20	I seldom use my mobile for other than making a phone call	.532
21	I lost my privacy to a certain extent because of cell phone	.511
22	I often use my cell phone to schedule my appointments	.503
23	It is very addictive	.555
24	It distract me from my important work.	.693
25	I feel awkward if the cell phone rings in public places	.475

Extraction method – Principle Component Analysis

In the above table, most of initial communalities are quite high indicating that all the variables share a good amount of variance with each other, an ideal situation for factor analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.304	21.216	21.216	5.304	21.216	21.216	3.208	12.831	12.831
2	2.938	11.751	32.968	2.938	11.751	32.968	2.613	10.454	23.285
3	1.913	7.651	40.619	1.913	7.651	40.619	2.539	10.158	33.443
4	1.383	5.533	46.152	1.383	5.533	46.152	2.003	8.011	41.453
5	1.143	4.570	50.723	1.143	4.570	50.723	1.744	6.978	48.431
6	1.077	4.309	55.031	1.077	4.309	55.031	1.650	6.601	55.031
7	.991	3.962	58.994						
8	.913	3.650	62.644						
9	.889	3.557	66.201						
10	.841	3.365	69.566						
11	.794	3.175	72.742						
12	.756	3.024	75.765						
13	.705	2.819	78.584						
14	.644	2.576	81.160						
15	.579	2.317	83.477						
16	.557	2.230	85.707						
17	.545	2.179	87.887						
18	.501	2.002	89.889						
19	.485	1.940	91.829						
20	.448	1.791	93.620						
21	.401	1.603	95.223						
22	.339	1.355	96.577						
23	.310	1.240	97.818						
24	.290	1.162	98.979						
25	.255	1.021	100.000						

Extraction Method: Principal Component Analysis

This output gives the variance explained by the initial solution. This table gives the total variance contributed by each component. We may note that the percentage of total variance contributed by first component is 21.216, by second component is 11.751 and by third component is 7.651 and so on. It may noted that percentage of total variances is the highest for first factor and it decreases thereafter. It is also clear from this table there are six distinct factors for the given set of variables.
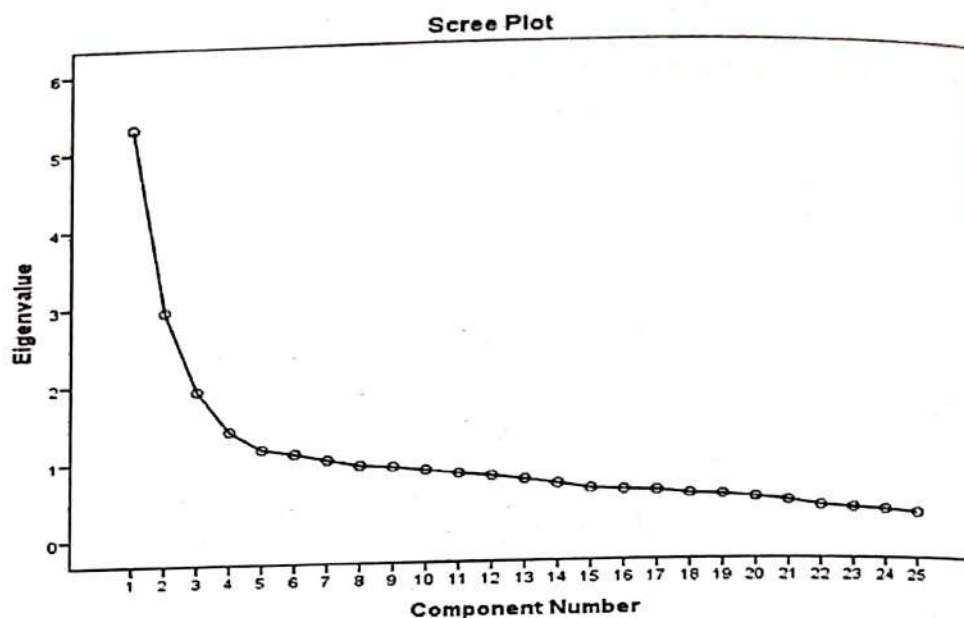
Scree Plot

The Scree Plot gives the number of components against the Eigen values and helps to determine the optimal number of components. The factors having steep slope that larger percentage of total variance is explained by that factor. The shallow slope indicates that the contribution to total variance is less. In the above plot, the first six factors have steep slope, and later on the slope is shallow. It may be noted from the above plot that the number of factors for Eigen value greater than one are six. Hence, the ideal number of factors is six.

Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
PIII1	.008	-.036	.778	.161	.262	-.071
PIII2	-.138	.096	.757	.110	.131	-.003
PIII3	.298	.001	.649	-.077	.035	-.025
PIII4	.678	.104	.284	-.075	.040	-.084
PIII5	.448	.323	.407	-.247	.114	-.020
PIII6	.183	.192	.373	-.197	.634	.003
PIII7	.171	.060	.462	-.188	.634	.056
PIII8	.729	.263	-.029	.163	.052	.030
PIII9	.797	.205	-.078	.106	.034	-.033
PIII10	.621	.077	.021	-.004	.248	.273
PIII11	.316	.122	.120	.135	.400	.031
PIII12	.399	-.023	.223	.001	.271	.370
PIII13	.285	.429	-.157	.129	-.150	.275
PIII14	.301	.593	.079	.124	-.043	.242
PIII15	.081	.761	.018	-.030	.204	-.009
PIII16	-.026	.607	.161	.047	.405	.072
PIII17	.141	.545	.281	.171	-.288	.236
PIII18	.339	.551	-.075	.013	.042	.072
PIII19	.374	.261	.121	-.043	-.358	.361
PIII20	-.002	.063	-.124	.129	-.023	.704
PIII21	-.097	.018	.094	.574	-.203	.349
PIII22	.029	.207	-.011	.054	.072	.672
PIII23	.315	.337	-.046	.572	.104	-.055
PIII24	.031	-.001	-.153	.799	.114	.131
PIII25	.037	.037	.252	.618	-.165	-.021

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

This table is most important table for interpretation. The maximum in each row (ignoring sign) indicates that the respective variable belongs to the respective factors. For example, in the first row the maximum is 0.778 which is factor 3; this indicates that the Q1 contributes to third factor. In the second row maximum is 0.757 which is again factor 3. Q2 contributes to factor 3, and so on.

Results of exploratory factor analysis:

Factor and item description (a)	Factor loadings
Factor 1: Absolutely dependent & think it's a necessity in modern times	
P4-Mobile phone is the basic priority in life.	0.678
P5-Having a mobile phone make me feel safe at any time	0.448
P8- Without mobile phone I feel out of the world	0.729
P9- If I miss my phone one day I feel handicapped	0.797
P10- With the mobile I can arrange any social get together at any time	0.621
P12- For official purpose I always communicate with my mobile.	0.399
P19- To be successful in the world today you definitely need a mobile phone	0.374
Factor 2: Contemporary, recreational and M-service users	
P13- I feel sad if I miss even one call.	0.429
P14- If you have a mobile phone you will never feel bored	0.593
P15- I use it for playing games, watching videos, or listening to music	0.761
P16- I use it for accessing internet and for m-services	0.607
P17- Carrying a latest handset model reflects who I am	0.545
P18- It's fun to have a mobile phone	0.551
Factor 3: Price-value conscious Consumers	
P1- Using mobile phone to make calls (both STD & local) is cheaper than using landline	0.778
P2- It is easy to afford a cell phone than to acquire a landline service	0.757
P3- Easy and low cost SMS service is available in mobile phone	0.649
Factor 4: Negative opinion holder	
P21- I lost my privacy to a certain extent because of cell phone	0.574
P23- It is very addictive	0.572
P24- It distract me from my important work.	0.799
P25- I feel awkward if the cell phone rings in public places	0.618
Factor 5: Safety & security conscious consumers	
P6- I can communicate with my parents when I am out and they stop worrying about me.	0.634
P7- I can communicate with anybody in emergency	0.634
P11- I always keep my phone on.	0.406
Factor 6: Functional users	
P20- I seldom use my mobile for other than making a phone call	0.704
P22- I often use my cell phone to schedule my appointments	0.672

Conclusion:

Young people do play a great role in consumer decision making because they are at an age level, where they have the capability and are economically able in making decision of their own in terms of what, how, when and where to buy. Even within such a small age group (18-30 years) of cell phone users—there are six distinct groups in terms of their attitudes toward their cell phone usage and in terms of the levels of integrating cell phones into their lives.

The first group shows a similarity in the decision orientation and they give lot of priority to the mobile device, they feel handicapped without it, and they use mobile phone to arrange any social meeting. They are so much dependent on it that they feel out of the world without it. Carrying a mobile phone gives them some sort of security. This group of respondents can be termed as **"Absolutely dependent & think it's a necessity in modern times consumers"**. Mobile phone is a valuable item which they carry all the times and its an integral part of their lives.

The second group consists of a large number of respondents who see mobile phone as a source of fun and entertainment. They use it for accessing internet, downloading games and music, videos, and they have a lot of hedonistic pleasure associated with it. They are also majority user of Mobile-commerce. For the mobile phone manufacturer and marketers this group of consumers form an attractive market. Since they value the latest model and other features, most of the companies are targeting this group with all the latest feature and technologies. This group could be coined as **"Contemporary, recreational and M-service users"**.

Consumers with particularly high consciousness of sale prices and lower prices in general, who use mobile phone as they think it is a cheaper option of connecting people than the landline. Mobile phones are more affordable and low cost SMS services are an added advantage. This group's name was given as "Price-value conscious Consumers".

A group of consumers feel mobile phone actually disturbing their works, their privacy is lost to a certain extent due to it, and they even feel awkward if mobile rings in public places. Some of them find mobile phone is very addictive. This group of respondents are termed as **"Negative opinion holder"**. It is a big challenge for the mobile companies to convert them a loyal customers.

There is a group of respondents termed as **"Safety/security conscious"** who find mobile phone can be used in emergency and family members can contact them through it whenever they feel anxious. It gives them a kind of security. And cell phones are not much integrated into their lives and they carry it in case of emergencies and for safety reasons.

The last group of consumers is called as **"Functional users"** as hardly they use this device for anything other than making a call or schedule an appointment.

The three groups **"Price-value conscious Consumers"**, **"Functional users"** and **"Negative opinion holder"** gives less importance to mobile phone. They use mobile phone as it is cheaper than landline or convenient to use. Few even hold a negative opinion about the mobile phones, as it is distracting from work. Different mobile phone companies should find new ways to convince them so that they integrate mobile phone as part of their lives and become habitual users.

Towards sustainable growth:

This present study has classified the general consumer decision making characteristics of young-adult Indian consumers. Some similarities and differences both in factors as well as individual item loadings were found between the Indian consumers and other countries. It shows variation from Sproles and Kendall (1986) buying characteristics. Thus, it has emerged from this study that the Consumer Style Inventory is sensitive to the cultural and economic background of the consumers. In

other words, it can be said that consumer decision-making styles are culturally dependent.

The profile of consumer decision-making has a broad application in the field of consumer behavior. Information on CSI will be of much use for organisation targeting young consumers in Indian Markets. It will be beneficial for the marketers to segment and target the young Indian market, especially for mobile phone. Apart from a representative sample of the population, specific consumer groups (say for example the elderly or rural or less educated) can be targeted for the development of the scale. Additionally, consumer decision-making in various product categories can also be looked into. Information on young-adult consumers' decision-making style will be of much use for organisations targeting Indian markets. It is very much likely that consumers scoring high on certain decision making characteristics will be having clear needs associated with those characteristics and thus, will enable marketers to target and segment them. Researchers can add these decision-making characteristics to their existing inventory of psychographic and lifestyle studies.

To have a sustainable growth in the present competitive market, marketer must know who their customers are, what they think and how they feel and why they buy a particular brand of mobile phone than any other. The Indian telecom sector has grown leaps and bounds in the last decades. The mobile phones are progressively becoming cheaper and affordable for people in the country with the increase in disposable income that improves the quality of life in India. Young people are tech-savvy , fashion conscious and love to explore with different brands and on the other hand there are huge options of different handsets with the access of internet, new schemes, and technology advancement has resulted in more and more consumers to switch to new mobile phones. The varieties of different models of mobile phone in the market helps to broaden-up consumer choices and

along with that different methods of shopping add complication in making a purchase decision. The cellular companies are also aggravating the situation by introducing latest mobile phone models having attractive features and Internet services facility. Every single cellular company is trying hard to keep their share intact as there is a cut-throat competition among different companies as well as different models of same company. As the young people have a great tendency to switch to a new phone just for hedonistic pleasure or to acquire a "innovator" status it is absolutely necessary for the mobile companies to understand their customers and their buying decisions. In our present study it was observed that with in a small age group (18-30years) there are six different types of consumers based on their mental orientation characterising decision making choices. So it's a challenge to the marketer how well they would be able to provide the desired products to the consumers and get the maximum satisfaction from them. If a company can acquire the competitive advantage that is long term and stable by creating products that cannot be duplicated or imitated by other firms , they will be the market leader with a core competencies, as we have seen in case of Apple Inc. But as we know Core competencies are not constant. They tend to change as the organization changes as well as with time. With the advancement of technology no single company can claim that their products or technologies cannot be duplicated easily. Therefore, it's important that the competencies are flexible and not etched in stone. Finally it is concluded that the Hamel and Prahalad (1989) strategies through which any company can achieve a sustainable growth by the flowing three factors:

- **Provide potential access to a wide variety of markets.**

- **Focus on the perceived value with which a customer measures a product.**

- **Makes it difficult for competitors to duplicate.**

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AN INVESTIGATION OF COGNITIVE DISSONANCE AMONGST CUSTOMERS VISITING SUPER MARKETS IN HYDERABAD CITY

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Abstract :

The theory of "cognitive dissonance" is of great importance in consumer behavior and Marketers have lots of interest in analyzing the post purchase behavior experienced by consumers. This paper has explored the presence of dissonance among the customers visiting super markets and analyzed the influence of super markets visited, frequency of purchase, expectations of customer, importance of the product being purchased, self confidence, sales persons persuasion and the cost of purchase on dissonance among the customers visiting super markets. Mean, Standard deviation and linear regression tools are being used in analyzing the data. Results show the presence of dissonance among the customers after the purchase.

Key Words: Dissonance, frequency of purchase, self confidence, stores visited, sales persons persuasion

Introduction:

People tend to seek consistency in their beliefs and perceptions. So what happens when one of our beliefs conflicts with another previously held belief? The term cognitive dissonance is used to describe the feeling of discomfort that results from holding two conflicting beliefs. When there is a discrepancy between beliefs and behaviors, something must change in order to eliminate or reduce the dissonance.

Cognitive dissonance is a discomfort caused by holding conflicting cognitions (e.g., ideas, beliefs, values, emotional reactions) simultaneously. In a state of dissonance, people may feel surprise, dread, guilt, anger, or embarrassment. The theory of cognitive dissonance in Social Psychology proposes that people have a motivational drive to reduce dissonance by altering existing cognitions, adding new ones to create a consistent belief system, or alternatively by reducing the importance of any one of the dissonant elements. An example of this would be the conflict between wanting to smoke and knowing that smoking is unhealthy; a person may try to change his feelings about the odds that he will actually suffer the consequences, or he might add the consonant element that the smoking is worth short term benefits. A general view of cognitive dissonance is when one is biased towards a certain decision even though other factors favor an alternative.

Cognitive dissonance can be defined as the uncomfortable tension or feelings that occur when we hold conflicting thoughts, attitudes or beliefs. Cognitive dissonance theory warns that people have a bias to seek consonance among their cognitions. According to Fastener, we engage in a process he termed "dissonance reduction", which he said could be achieved in one of three ways: lowering the importance of one of the discordant factors, adding consonant elements, or changing one of the dissonant factors. This bias gives the theory its predictive power, shedding light on otherwise puzzling irrational and even destructive behavior.

Cognitive dissonance is involved in shaping our views about people, as well as our own identities. For instance, Self-evaluation maintenance theory suggests that people feel

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dissonance when their cherished skills or traits are outmatched by close social ties (e.g. Jill, the painter feels dissonance because she is friendly with a master painter - Jill can either care less about painting, or justify her inferiority in some other way). Balance theory suggests that people have a general tendency to seek consonance between our views, and the views or characteristics of others (e.g. the religious believer feels dissonance because his partner does not believe the same thing - dissonance which the believer will be motivated to justify). People may self handicap so that any failures during an important task are easier to justify (e.g. the student who drinks the night before an important exam in response to his fear of performing poorly).

Review of literature:

Douglas R.Hausknecht and etal(2009, pg 1-9) differentiated the cognitive, emotional and behavioral aspects of dissonance and described the relationship with other purchase decisions.

Mohammed Ul Hassan khan and Muhammad Yusuf (2012, pg 1-10) said that consumer behavior can be reviewed in three phases: 1. Predecisional determinants of product preference 2. Post decisional determinants of product preference and 3. Information seeking behavior. The first two areas generally support the dissonance based predictions, while the third generally falls to support the predictions.

Mc.Guire (1996, pg 1-7)) in his study discussed six ways by which inconsistency in a customer can be created. They are: Simultaneous occupation of two or more conflicting social roles, job demands, leisure time, time for attending the other issues and search and comparison effects between two or more products.

Oliver, Richard.L (1997,1-15) reviewed the free choice version of dissonance, which he characterized as having lain dormant for some time. They said that dissonance concept is stretched to the two third of the satisfaction process. The cognitions and feelings mutate into true dissonance after the decision is made. With use and experience, the dissonance dissipates and yields satisfaction or dissatisfaction.

Oshikawa S (1969, pg 44-49) stated that dissonance exists under the following 3 conditions: 1. After making an important and difficult decision 2. After being coerced to say or do something, which is in contrary to private attitudes, opinions or beliefs. 3. After being exposed to discrepant information.

Shih Yung Chou (2012, pg 199-204) explored that consumers experience a greater inconsistency between their internal beliefs of an online retailer and online reviews about the online retailer that exists. A consumer will make the purchase decision based on his/her internal beliefs when a cognitive dissonance is experienced.

Tarun Kanthi Bose (2012, pg 1-31) explored the factors that create cognitive dissonance in consumer buying decision making particularly among the consumer goods purchasers. He said that several factors are influential in creating cognitive dissonance among the customers of consumer goods. Some of them are norms, family status, religious value, customs and beliefs.

Thomas Salzberger and Monika Koller (2010, pg 5-11) studied the relationship between dissonance and their impact on loyalty and consumer behavior. It is found that the two components of dissonance like cognitive components and emotional components are significant.

Uzma Hasan and Dr. Reshma Nasreen (2012, pg 7-12) explored the implications of cognitive dissonance on varied aspects of consumer buying behavior and the factors leading to dissonance and prior to it. They argued that higher the degree of purchase involvement the lesser would the dissonance level. The more time the consumer devotes to the purchase decision, the lesser would be the dissonance.

Statement of problem:

Understanding the behavior of consumers after they consume the product or services is a key to formulate strategies which help retain target consumers. One major reason for consumer defection is the dissonance formed among the consumers who purchase newly. More the intensity of dissonance, more are the chance for customer dissatisfaction. Hence, an understanding of how affirmative the customers are after they purchase a product or service is important to develop satisfied and loyal customers. Every organization has to have data about their customers' post purchase behavior. Hence, the present study is conducted for understanding the customers' post purchase dissonance levels among customers visiting supermarkets.

Objectives of the study:

1) To study the presence of dissonance among customers visiting super markets in Hyderabad.

2) To study the influence of stores visited, frequency of purchase, expectations, importance, self-confidence, sales person persuasion and cost of purchase on dissonance among customers visiting super markets.

Sample and data:

The location for the study is restricted to the selected super markets in Hyderabad city. The criteria for selection of the respondents for the study were the customers who visit the super markets to buy any of the products. The total sample size comprised 150 customers. For the purpose of this study, a quantitative non-probability convenience sampling design was used to assess the dissonance in the customers' minds. The customers who visit super markets in Hyderabad city such as Mart super market, Spencer's super market, Ration wala, More for you and Reliance fresh are considered for data collection.

Data collection was carried out with the prior permission from the customers, to spend few minutes of time with the questionnaire. Some of the respondents were interviewed by asking the questions while they were purchasing the products. Good rapport with the customers visiting the super markets was established by giving introduction about the objective of the study, importance of their co-operation and sincere responses before administrating the questionnaire. The tool used for the primary data collection is a structured questionnaire which consists of 18 questions designed to identify the cognitive dissonance. All the questions are closed ended. Questionnaire is an agreement-disagreement scale carrying 18 statements on a 5 point likert type scale.

Data analysis and discussions:

Table: 1: Sample demographics (Page No. 62)

Table: 2: Perception of post purchase dissonance (Page No. 63)

Table: 3: Customers concern about purchase decision (Page No. 64)

Table: 4: Presence of post purchase dissonance (Page No. 65)

From the above table we can identify the presence of dissonance among customers at three instances:

1. Even though the customers are comfortable with the purchase decision they have made, there is uneasiness among customers with regard to their purchase decision.

2. The customers are seeking support by talking to their friends and family about their purchase decision.

3. Customers are also seeking support from published data about the purchased brand.

Factors influencing post purchase dissonance:

In order to study the factors which have influence on post purchase dissonance, stores visited, frequency of purchase, expectations, importance, self-confidence, salesperson's persuasion and cost of purchase are considered

as independent variables. A score of post purchase dissonance is calculated for individual cases in the sample. This score of post purchase dissonance is considered as the dependent variable. A Linear regression analysis is carried out to study the changes in influencing intensity of the independent variables on dependent variables.

Linear Regression analysis:

Model Summary

The standard approach for describing the relationships in this problem is linear regression. The most common measure of how well a regression model fits the data is R2. This statistic represents how much of the variance in the response is explained by the weighted combination of predictors like support of the respondent, uncertainty of the respondent, expected satisfaction anxiety of the respondent and forced compilation. The closer R2 is to 1, the better the model fits. Regressing consumer dissonance on the five predictors' results in an R2 of 0.528, indicating that the approximately 52% of the variance in the consumer dissonance rankings is explained by the predictor variables in the linear regression (Table 5, Page No. 66)

ANOVA

There is a good association between consumer dissonance and the various aspects like support of the respondents, uncertainty of the respondent, expected satisfaction, anxiety of the respondent and forced compilation (Table 6, Page No. 66)

Coefficients

The values of coefficients reflect the amount of change in the predicted preference ranking. Using standard coefficients, interpretations are based on the standard deviation of the variables. Each coefficient indicates the number of standard deviations that the consumer dissonance changes for a one degree change in predictor, while all other predictors are kept constant (Table 7, Page No. 66)

Suggestions:

1. Even though the customers are comfortable with the purchase decision they have made, there is uneasiness among customers with regard to their purchase decision. Such uneasiness among customers can be reduced by providing testimonials of the purchased products.

2. The customers are seeking support by talking to their friends and family about their purchase decision. This means that customers visiting and purchasing products have doubts about their purchase decisions. Such doubts can be reduced by showing advertisements wherein the friends and family members of the customer are assuring the customer about his/her choice of selecting the super market when purchase decision has to be made.

3. Customers are also seeking support from published data about the purchased brand. Hence, provide such information by way of third party certifications about the quality of the products/services from the super market and assure the customer that only quality products and quality brands are sold in the super market.

4. It was found that, as customer expectations increase, there are higher chances of dissonance among them. Hence, set up a customer feedback system that provides data about customer expectations which can be helpful in fulfilling those expectations.

5. It was also found that persuasion by salespeople has negative impact on dissonance. Hence, it is important that sales people do the sales probing in such a way that assures customers of their purchase decisions.

Conclusion:

Cognitive dissonance with regard to consumers

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is showing a greater role especially with regard to the Super markets. As more number of super markets are being established throughout the city a keen observation and competitive marketing strategies have to be designed in order to retain the customers. The value to researchers interested in exploring post purchase phenomena such as dissatisfaction, complaint behavior and negative word of mouth, helps in getting more satisfied customers. Researchers interested in modeling the consumer dissatisfaction process may place greater value.

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Table: 1: Sample demographics

Particulars	Category	Frequency	Percentage
Gender	Female	64	42.7
	Male	86	57.3
Age	Less than 25 years	16	10.7
	25-34 years	32	21.3
	35-44 years	50	33.3
	45-55 years	29	19.3
	55 years and above	23	15.3
Education	Illiterate	3	2.0
	Below matriculate	6	4.0
	Matriculate	43	28.7
	Graduation	72	48.0
	Post graduation	26	17.3
Employment	Private sector	72	48.0
	Government sector	43	28.7
	Self employment	35	23.3

Table: 2 : Perception of post purchase dissonance:

Particulars	Attributes	Frequency	Percentage	Mean	Standard deviation
Perception of purchase outcome	Strongly disagree	3	2.0	3.626	0.823
	Disagree	1	0.7		
	Neutral	68	45.3		
	Agree	55	36.7		
	Strongly agree	23	15.3		
Pleased with the way product is purchased	Neutral	45	30.0	3.9400	0.7348
	Agree	69	46.0		
	Strongly agree	36	24.0		
Comfortability with the purchase decision	Neutral	48	32.0	4.020	0.814
	Agree	51	34.0		
	Strongly agree	51	34.0		
Uneasy about the purchase decision	Disagree	2	1.3	4.033	0.8388
	Neutral	44	29.3		
	Agree	51	34.0		
	Strongly agree	53	35.3		
Right choice when I purchased this product	Strongly disagree	1	0.7	4.0133	0.785
	Neutral	39	26.0		
	Agree	66	44.0		
	Strongly agree	44	29.3		
Probably purchase this product again	Disagree	1	0.7	3.906	0.780
	Neutral	50	33.3		
	Agree	61	40.7		
	Strongly agree	38	25.3		
Good deal when I purchased this product	Disagree	1	0.7	3.853	0.736
	Neutral	50	33.3		
	Agree	69	46.0		
	Strongly agree	30	20.0		
Do a good job of meeting important needs	Neutral	54	36.0	3.846	0.739
	Agree	65	43.3		
	Strongly agree	31	20.7		
I have made a wise choice in my purchase	Strongly disagree	1	0.7	3.833	0.78
	Disagree	4	2.7		
	Neutral	42	28.0		
	Agree	75	50.0		
	Strongly agree	28	18.7		
Probably pick up a consumer product to make sure of the product	Strongly disagree	2	1.3	3.893	0.828
	Disagree	2	1.3		
	Neutral	42	28.0		
	Agree	68	45.3		
	Strongly agree	36	24.0		

Table: 3: Customers concern about purchase decision:

Particulars	Attributes	frequency	Percentage
Stores visited before visiting this Super market	None	31	20.7
	1 to 4	66	44.0
	3 to 4	34	22.7
	More than 4	19	12.7
Frequency of purchase	Once or twice a week	24	16
	Once or twice a month	88	58.7
	Once a year	24	16
	Less than one year	14	9.3
Expectations on retailer	Below average	13	8.7
	Average	53	35.3
	Higher than average	62	41.3
	Very high	22	14.7
Product importance	Not very	26	17.3
	Slightly	57	38.0
	Very	34	22.7
	extremely	33	22.0
Stores visited after visiting this Super market	One	36	24.0
	2 or 3	53	35.3
	4 or 5	41	27.3
	More than 5	20	13.3
Sales persons persuasion	Not easily at all	13	8.7
	Slightly	43	28.7
	Very easily	61	40.7
	Extremely	33	22.0
Confidence about the product	Not very	11	7.3
	Slightly confident	51	33.8
	Average	53	35.1
	Very confident	35	23.2

Table: 4: Presence of post purchase dissonance:

	Statement	Mean	Dissonance
Expected satisfaction	1. I feel that I will be happy with the purchase I have just made from this Super market.	3.62	Absent
	2. I'm sure that I'll be pleased with the way product purchased from this Super Market performs well.	3.94	Absent
Anxiety	3. I'm comfortable with the purchase decision from this Super market I've just made.	4.02	Absent
	4. I'm uneasy about the purchase decision from this Super market that I just made.	4.03	Present
Uncertainty	5. I'm confident that I've made the "right" choice when I purchased this product from this Super market.	4.01	Absent
	6. I would probably purchase this product again in the future from this Super market only.	3.90	Absent
	7. I feel that I got a "good deal" when I purchased this product from this Super market.	3.85	Absent
Forced Compliance	8. This Super market and its products will probably do a good job of meeting my important needs.	3.84	Absent
Support	9. I'll probably talk to my friends or family to ask them if they think I've made a wise choice with my purchase from this Super market.	3.83	Present
	10. I would probably pick up a copy of Consumer Reports to make sure the product or brand I just bought from this Super market received high ratings.	3.89	Present

Table: 5 : Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.727[a]	.528	.512	.33212

Predictors: (Constant), support of the respondent, uncertainty of the respondent, expected satisfaction, anxiety of the respondent, forced compilation.

Table: 6: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17.777	5	3.555	32.233	.000[b]
	Residual	15.883	144	.110		
	Total	33.660	149			

a. Dependent Variable: consumer dissonance

b. Predictors: (Constant), support of the respondent, uncertainty of the respondent, expected satisfaction, anxiety of the respondent, forced compilation

Table: 7: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.215	.454		-4.875	.000
Expected satisfaction	.299	.050	.353	5.955	.000
Anxiety of the respondent	.355	.053	.401	6.681	.000
uncertainty of the respondent	.251	.064	.230	3.951	.000
forced compilation	.281	.062	.315	4.531	.000
support from the others	.240	.058	.286	4.141	.000

AN INVESTIGATION OF ASSOCIATION AMONG FIVE MARKETING MIX ELEMENTS AND BRAND EQUITY: EVIDENCE FROM INDIA

Syed Irfan Shafi*
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Abstract:

Efficient Marketing Communication (EMC) is one of the major devices for firms in order to establish brand equity of firms. This paper aims to investigate the effect of marketing mix on brand equity in mobile phones domain among young consumers. The statistical population consists of consumers fromKashmir.The research sample involves 116 consumers selected from a city of Srinagar/Kashmir and they are asked to reply questions on Likert based. The data were collected by the structured questionnaire. According to the research conceptual model, the relationship between marketing mix dimensions such as (Price, Store Image, Brand Name, Distribution and Advertising) and Brand equity Dimensions Such as (Brand Awareness, Brand Association, Perceived Quality and Brand Loyalty) was investigated. Data were analysed with the help of SPSS (Statistical Product and service Solutions),Pearson's correlation analysis and regression analysiswere used for data analysis and results showed that out of all marketing mix elements tested in study,advertising, Store image and distribution have the most significant effect on brand equity. Companies by utilising these strategies (factors) can succeed more in present competitive marketplace.

Keywords : Market; Mobile phone; Brand; Consumers, India

Introduction

The market for mobile phones is increasing at a rapid pace all over the world and emerging country like India is also witnessing a two digit growth in the numbers year on year. It is evidence that number of national and international companies are paying interest to set their position in this emerging market, Mobile cellular industries like Nokia, Samsung, LG, Sony Ericsson, Motorola and some other local companies like Micromax, Karboo, spice, etc. and Mobile cellular service providers such as Airtel, Reliance, Tata idea, BSNL and others.

Both Mobile handsets as well as Mobile cellular providers perceivehigh competition in price and proposingfascinating advertising actions is also same to all the players. Promotion plays a vital role in making or breaking a brand. It is not enough to have good product and pricing strategy but it is of immense significance to have a broad band of promotional programmes. A case of HTC, a leading multinational organisation is not able to make position in Indian Market, and beside they have quality products and good service offerings but they fail due to the miserable promotionalapproaches. Brand building is one of the best ways of doing business. A successful brand building gives a powerful competitive position to the producers and increases the power of retailers. It can also act as a defensive factor to protect market share in front of competitors. Brand is one of the most important intangible assets in today's enterprises and in many cases; an enterprise is mostly valued mainly based on its brand. During the past few two decades, there have been numerous efforts to measure the impact of brand on customer's purchasing intention (Lee & Back, 2011).

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Purpose of this study is to investigate the effect of marketing mix on brand equity in mobile phones among young consumers. According to the research conceptual model, the relationship between marketing mix dimensions and Brand equity Dimensions was investigated.

Literature Review

Aaker (1991) mentioned brand equity is a set of brand assets and liabilities linked to a brand, its name and symbol, which add to or subtract from the value provided by a product or service to a firm and to that firm's customers. Brand equity is a multidimensional concept. It consists of brand loyalty, brand awareness, perceived quality, brand associations and other proprietary brand assets. Farquhar (1990) contends that brand equity to a consumer follows from a positive evaluation of, or attitude toward, the branded products.

Yoo, Donthu and Lee (2000) recognized that perceived quality, brand loyalty, brand awareness and brand associations are the common dimensions of brand equity.

Brand loyalty

Aaker (1991) cited brand loyalty as the favourability or strength of a brand created by the customer's satisfied experience of use and purchases a direct way to determine Loyalty, especially habitual behaviour, is to consider actual purchase patterns. Among The measures that can be used are: repurchase rates, per-cent of purchase and number of brands purchased. The brand loyalty of existing customers represents a strategic asset that, if properly managed and exploited, has the potential to provide value in several ways: reduce marketing costs, leverage trade, and attract new customers-brand awareness createdand reassurance to new customers-time to respond to Competitive treats.Aaker,(1991)

Perceived Quality

Zeithamal (1988) definesperceived quality as"the consumer's judgment about a product's overall excellence or superiority. Perceived quality is the attribute observed and understood by the consumers- may it be about a product or services providers. It has been defined as customer's perception of overall quality or service compared to its alternatives and with respect to its intended purpose.

Brand Awareness

Keller (2003) defined brand awareness as how well a customer identifies the brand under different conditions. The depth (the ease of recall and brand recognition) and Breadth (number of purchase and consumption situations) of recall is crucial in brand awareness. Keller further argues that positive brand image and brand awareness would have significant influences on marketing activates related to the brand of product.

Brand Association

Aaker (1991) defines brand associations as "anything linked in memory to a brand", and brand image as "a set of brand associations, usually in some meaningful way." Aaker categorized brand associations in to11types: product attributes in tangibles, customer benefits, relative price, use/application, user/customer, celebrity/person, life style/personality, product class, competitors and country/geographicarea.

Marketing mix Elements

Marketing mix Elements is combination of all the promotional tools which organisations are using in order to promote their products and services(Yoo, Donthu and Lee, 2000). The present study also examined customers perception and behaviour of selected five marketing mix tools such as Price, Store image, Brand name, Distribution intensity and advertising.

Price

An amount that the customer is willing to pay in order to obtain a valuable product usually considered to be based on the concepts of money, but it can be exchanged with any other valuable things. Customers are utilising price as indicator of product quality the more the product cost the more customer perceive it durable and worth. It is also suggested that consumers not only perceive price as a sign of expense but it is also talks about product quality and excellence. The relationships between price and product quality received a substantial amount of attention by marketing researches, particularly since the mid-1980s (Scitovsky,1945).

Store Image

Includes features such as physical environment, service levels and quality of goods.(Baker et al, 1994; Zimmer and Golden, 1988).Srivastava and Shocker(1989) indicated that the importance of channel design and Management as a marketing tool for increasing brand equity is growing. In a Distribution channel, retailers encounter a firm's ultimate consumers. Selecting and managing retailers is therefore a firm's major marketing task in satisfying consumers' needs. In particular, distributing through good image stores signals a brand has good quality.

Brand Name

Brand Name is the term sign or symbols that differentiate product and service from Competitors (American Marketing association). Centuries ago brand was implemented to distinguish an individual's cattle from another's by putting a burned symbol in to animals skin in order to identify it easily, and was consequently used in commercial, advertising and marketing. Correct brand name leads a company in to high edges results high sales not only particular product but whole products associated with the brand (Aaker 1991)

Distribution

Distribution is where business sells its products or services and how it gets those products or services to your customers. It is most important element because only customer will attract with the product once the product is available. In present market scenario were competition is very high only organisation will achieve their high market share if their distribution intensity is high. Distribution is regarded as intensive when products are placed in a large number of Stress estocover the market. Consumers will be more satisfied when a products available in a great number of stores because they will be offered the product where and when they want it. (Fens,OliverandKluyver1989)

Advertisement

Advertising means communicating message it is introducing something into others or faking something is good or bad. It includes visual and verbal messages which is promoting an opinion with the product from a source through advertising channels to all the society and will spend money for it. Advertising researchers find advertising is successful in generating brand equity. (Boulding, LeeandStaelin, 1994) Simon and Sullivan (1993) find a positive effect of Advertising spending on brand equity. Cobb-Walgren, Beal and Donthu (1995) find that spending on advertising has positive effects on brand equity and its dimensions. Advertising is an important extrinsic cue signalling product quality.

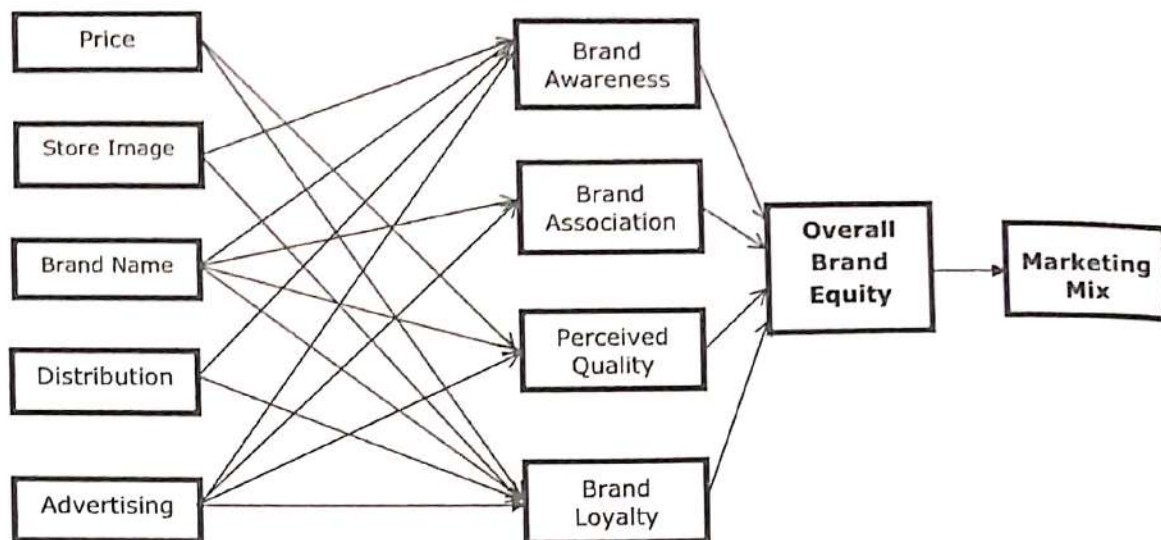Figure 1 shows present study framework "influence of selected Marketing mix elements on brand equity".

Figure 1: Hypothetical Framework

Research framework of study has been developed on the basis of previous theoretical and empirical research works already done in similar field. In order to check the fitness of study framework (Mentioned Below) hypothesis was developed to examine the relation between selected five marketing mix elements on overall brand equity.

Hypothesis:

H1:Association among Marketing mix elements (price, store image, Brand name Distribution intensity, advertising and brand equity dimensions (Brand awareness, Brand association, Perceived quality, Brand loyalty) is positive.

H2: Association among brand equity dimensions (Brand awareness, Brand association, Perceived quality, Brand loyalty) and overall brand equity is positive.

H3: Association among Overall Brand equity and marketing Mix elements is positive.

Research objectives:

The major objective of this research is to study the influence of marketing mix elements on brand equity. The secondary objectives are

● To identify the factors influencing selected marketing mix on four dimensions of brand equity.

● To examine the relationship among dimensions of brand equity to overall brand equity.

● To find out the relation between overall brand equity and marketing mix strategies.

Research Methodology:

Descriptive research was opted to identify the means and standard deviation of variables under study. The main purpose of this research is to examine the factors influencing marketing mix elements on brand equity in mobile segment in Srinagar, Kashmir. Different statistical methods were used for testing study hypotheses. Pearson's correlation tests as well as regression analysis were used for study to test impact of marketing mix on overall brand equity

Sampling:

The survey covered products categories of (Mobile Phone) from which four brand names were selected (Nokia, Sony Ericsson,

Samsung, Motorola). Selection of product for study is done after survey of 10 depth interview conducted among mobile phone users who are associated with particular brand, During the interviews, the customers were asked to name the products they currently use or have used or bought for themselves or others. Based on the results of in-depth interviews the above product categories were selected. Also final selection of product stimuli for study was done by seeing no of factors like price, features, present promotional strategies, availability quality, market share etc.

Data collection methods:

In the present study structured questionnaire was used in order to collect the data, in all the questions except demographic characterises 5 point likert scale were used. In the questionnaire 5 considered as strongly agree, 4 as agree, 3 natural, 2 disagree, 1 for strongly disagree. Data were collected from the user of mobile phone in Srinagar/ Kashmir. The survey included a sample of 116 respondents from the area of Srinagar city. Total 150 questionnaires were handed over to the users and they were asked to fill it. In return 116 questionnaires were considered as useful because they were completely filled. Response rate of filled questionnaire is 77percent, which is quiet good and it represents the sample of the population.

After the process of data collection, responses are manipulated by the help of the software i.e. SPSS 16.0 for further data analyses. For testing study results descriptive statistics and correlation and regression analyses were applied.

Statistical Analysis & Results

Mean and Standard Deviations of Variables

The higher the mean value means that the more respondents agree to that the said variables could have a great impact on brand equity. When analysing the mean and Standard deviations of variables, it is important to take note that a significantly large value of standard deviation means that the data being tested is far away from the mean Where as a smaller value means that the tested variable is much closer to the mean.

Table1 shows the mean of price, store image, Brand name, distribution, advertising were all below the level of 5.0 and standard deviation of mentioned variables were below 1.67. It means that the mean result is accurate. The means of perceived quality, brand awareness, brand association over 3.67. However, the standard Deviation of brand loyalty and brand awareness is 0.67 and 0.59 respectively. It means that even though the mean values of both variables are high, the data being tested is not close to the mean value.

Table1: Mean and Standard Deviations of Variables		
Variable Items	**Mean**	**Std. Deviation**
Price	3.78	1.07
Store image	3.54	1.20
Brand name	3.66	1.11
Distribution	4.36	0.76
Advertising	3.02	1.67
Brand awareness	3.67	0.59
Brand association	4.17	0.51
Perceived quality	3.87	0.55
Brand loyalty	3.95	0.67
Brand Equity	4.13	0.50

Hypothesis Testing

For analysing the data, collected from mobile telephone users at Srinagar/Kashmir correlation and regression tools are used. To analyse the relationship between two variables "Pearson correlation" has been used and the results are shown in the Table 2. In this analysis Correlation is significant at the 0.01 level (2-tailed).

Table 2 highlight the relationship between different variable of marketing mix and brand equity by using Pearson correlation coefficient analysis. It is found that most of the variables are having a statistically significant relationship with each other. From among the different variables the highest relationship is found between perceived quality and brand equity with the coefficient value of 0.882 followed by brand awareness and brand equity with the coefficient of 0.438, which indicates that the perceived quality and awareness among the people is the most important elements to increase the brand equity of the product. It is also found that price of the product and brand loyalty are significant with the value of 0.268 and relation between price and perceived quality on the other hand is not significant because the significance value is higher than 0.01. Similarly store image with brand awareness, brand loyalty is significant and with brand association it is not significant, brand name have significant relationship with all the variables of brand equity and distribution have negative relation with brand awareness and positive significance with Brand Loyalty, advertising have positive relation with brand awareness and brand association with the value of (0.103) and (0.223), and negative correlation with perceived quality and brand loyalty having value of (-0.10) and (-0.194). It is also been found that brand awareness (0.438), brand association (0.225), perceived quality, (0.882), loyalty (0.312) have significant relation with overall Brand equity and overall brand equity have also positive significance with marketing mix elements that is price (0.060), store image (0.081), brand name (0.059), advertising (0.071), distribution (0.038). It can also be gauged that the relationships between price & perceived quality is having less co-efficiency with a value of 0.012 among the statistically significant relationships that judges price of the product is not highly effective with perceived quality of a product.

Table 2: Pearson Correlation Coefficient Analysis between the variables.

S. No.	Test variables	Correlation Coefficient	Sig. (2-tailed)	Results
1	Price & Brand Loyalty	0.268	0.004	Significant
2	Price & Perceived Quality	0.112	0.232	Not significant
3	Store Image & Brand Awareness	0.233	0.012	Significant
4	Store Image & Brand Association	0.012	0.233	Not significant
5	Store Image & Brand Loyalty	0.174	0.000	Significant
6	Brand Name & Brand Awareness	0.378	0.000	Significant
7	Brand Name & Brand Loyalty	0.378	0.000	Significant
8	Brand Name & Brand Association	0.076	0.001	Significant
9	Brand Name & Perceived Quality	0.251	0.006	Significant
10	Brand name & Brand Loyalty	0.098	0.001	Significant
11	Distribution & Brand Awareness	0.147	0.116	Not Significant
12	Distribution & Brand Loyalty	0.085	0.000	Significant
13	Advertising & Brand Awareness	0.103	0.001	Significant
14	Advertising & Brand Association	0.223	0.006	Significant
15	Advertising & Perceived Quality	-0.108	0.247	Not significant
16	Advertising & Brand Loyalty	-0.194	0.136	Not significant
17	Brand Awareness & Brand Equity	0.438	0.000	Significant
18	Brand Association & Brand Equity	0.225	0.015	Significant
19	Perceived Quality & Brand Equity	0.882	0.000	Significant
20	Loyalty & Brand Equity	0.312	0.001	Significant
21	Brand Equity & Price	0.060	0.005	Significant
22	Brand Equity & Store Image	0.081	0.000	Significant
23	Brand Equity & Brand Name	0.059	0.009	Significant
24	Brand Equity & Distribution	0.071	0.000	Significant
25	Brand Equity & Advertising	0.038	0.000	Significant

Regression Analysis

For testing hypothesis concerning impact regression analysis is required. Kerlinger and Lee (2000) were of the view that regression analysis is used to relate one variable (dependent) with one or more independent variables. It identifies how much of a dependent variable is explained by an independent variable (see Table 3).

Table 3: Regression Coefficients for Dependent Variable: Brand Equity

S. No.	Model	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.
		Beta	Std. Error	Beta		
1	(Constant)	0.66	0.238		2.80	0.00
2	PRICE	-0.02	0.029	-0.05	-0.95	0.34
3	Store Image	0.74	0.036	0.45	14.48	0.01
4	Brand Name	-0.06	0.026	-0.13	-2.37	0.01
5	Distribution	0.29	0.028	0.21	10.99	0.03
6	Advertising	0.42	0.031	0.49	13.20	0.02
7	Brand Awareness	-0.00	0.044	-0.00	-0.04	0.96
8	Brand Association	0.13	0.041	0.14	3.32	0.00
9	Perceived Quality	0.83	0.047	0.91	17.76	0.00
10	Brand loyalty	0.61	0.035	0.81	10.41	0.02

Note: Dependent variable: Brand Equity

In this regression, the dependent variable "brand equity" and the independent variables are: "Price, Store Image, Brand name, distribution and advertising. After processing data through regression analysis, it has been shown that there is a significant relationship between among all variables. As can be seen in the table of regression coefficients, can be concluded that the regression equation between the dependent variable and independent variables into a few shows, is expressed as follows The coefficients obtained, we can conclude that the obtained dimensions, advertising, Store image and distribution have the greatest impact on brand equity and organizations can invest more on these components and to try to gain competitive advantage for its brand equity.

Findings and Conclusion

The primary purpose of this study is to investigate the impact of Marketing mix elements on brand quality in the Mobile phone Sector in Kashmir. As results have shown that, there is a significant relationship between all variables. The results indicated that there was a positive and meaningful relationship between marketing mix efforts and brand equity. In other words, more advertisements and awareness could help better market exposure, which means customers will have more awareness on market characteristics. Among all mixed efforts, quality and awareness influences more on brand equity, which means consumers care more on product quality than other features. The present study found no significant relationship between high prices and customer perceived quality, store image and brand association, advertising and perceived quality, advertising and brand loyalty. In the situation when service provider failed to offer quality to their customer then their customers will become dissatisfy. These dissatisfied customers will switch to other brand. In services, quality is subjective. Customer want

good quality, better distribution intensity, store image If customer dos not receive any of it then it contributes in the origination of dissatisfaction and in this way brand equity affected severely. Because from the data analysis it has been shown that, there is significant relationship among all variables present in this construct.

Limitations and Future Research Directions

The present research study contains some limitations. These limitations can be used as a path for future research directions. First limitation is about the generalizability of the sample size that is used for the representation of the whole population in a mobile phone industry. Sample size is 116, which is not the good representation of whole population in mobile phone industry. Moreover, this sample size does not provide the whole population viewpoint of the effect of the marketing mix elements on brand equity. Second limitation is only selected elements of marketing mix (price, store image, Brand name, distribution and advertising) have been measured. Other dimensions have been ignored.

Another limitation is that as research study is cross sectional in nature, so the results that are presented here are only referred as one time-period with the present eco-social factors that influence the results. Nevertheless, if we take this study in a longitudinal perspective results will be more comprehensive, generalized accurate and refined.

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THE ROLE OF TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT

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Abstract :

"Technology role in sustainable development" is the role of technology to prevent the 'exploitation' of the resources of the earth purely for wealth and riches. It is to respect the environment and provide a healthy space for those who reside here. It is to make sure we know when enough is enough. Global sustainability encompasses an economic dimension, an environmental dimension and social dimension, both at national and international level. The complexity of the interrelationships between environmental, economic and social changes makes it very difficult to develop promising strategies to deal with them. Policy makers need to ensure and manage these three challenges successfully and to provide the guidelines to move forward.

Although technology has often been regarded as the source of many problems, it nevertheless represents one of the key opportunities to cure them through a number of channels. The right technologies to make development sustainable are already available today – the challenge is deploying them in the right way. In this context the key challenge is to create links between the people with the ideas. The present study has been undertaken to assess the role of technology in sustainable development and to find the impulse of mankind towards sustainability.

Keywords: Sustainable development, Technology for sustainable development, Strategy for sustainability, Economic development

Introduction

The modern world is faced with the challenge of global, shared responsibility for development tuned to the needs of people and of nature, as well as with the understanding that the planet Earth must be adequately preserved equally for the present and for the future generations. There are strong ethical reasons for the present generation to meet own needs without compromising the development opportunities of the future generations. This reasoning is based on the fundamental principle of moral justice that all people have equal rights and broadest freedoms provided that they do not contradict the freedom of others. The right of the present generation to use resources and to enjoy a healthy environment must not compromise the same rights of future generations.

Sustainable Development Strategy means sustainable development as targets-oriented, long-term (continuous), comprehensive and synergetic process with impacts on all aspects of life (economic, social, environmental and institutional) at all levels. Sustainable development is focused on developing models which provide quality response to social-economic needs and interests of citizens, and at the same time eliminating or significantly reducing impacts which are a threat or damage to the environment and natural resources. The long-term concept of sustainable development implies continued economic growth, but such growth that brings with it not only economic efficiency and technological progress, but also a higher share of cleaner technologies and innovation in the society as a whole and corporate social responsibility, enabling poverty reduction, long-term better use of

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resources, improved health and quality of life and pollution reduced to the carrying capacity of the environment, prevention of future pollution and preservation of bio-diversity. One of the most significant objectives of sustainable development is generating new employment and reducing unemployment rates, as well as reducing gender and other inequalities, promoting employment of the young and the disabled and persons from marginalized groups.

Sustainable development also implies the need to harmonize the different aspects of development and the contradictory motifs included in individual sectoral programmes. Effective resolution of such conflicts requires a certain level of political will and dedication. Key pre-requisites for the acceptance and adoption of concepts of sustainable economic and social development and their successful implementation include adequate leadership, broad political, social and media support, and a social consensus on the need to accept the concept. In this context, strong political will, dedication of the government and public support are the most direct factors of success. One of the features of sustainable development is greater public participation in environmental decision-making. Adequate public participation means more than declarative will expressed by the government but also special incentives, above all prompt information and education so that the public is in a position to objectively influence the outcomes that it is interested in achieving.

The United Nations Conference on Sustainable Development (UNCSD) was organized in pursuance of General Assembly Resolution 64/236 (A/RES/64/236), and it took place in Rio de Janeiro, Brazil from 20-22 June 2012 to mark the 20th anniversary of the 1992 United Nations Conference on Environment and Development (UNCED). The 10th anniversary of the 2002 World Summit on Sustainable Development (WSSD) was held in Johannesburg.

At the Rio+20 Conference, World leaders, along with thousands of participants from Governments, the private sector, NGOs and other groups, came together to shape how we can reduce poverty, advance social equity and ensure environmental protection on an ever more crowded planet to get to the future we want. The Conference focussed on two themes: (a) a green economy in the context of sustainable development poverty eradication; and (b) the institutional framework for sustainable development. In Rio+20, Seven priority areas highlighted requiring priority attention these include decent jobs, energy, sustainable cities, food security and sustainable agriculture, water, oceans and disaster readiness.

Defining Sustainable Development

Sustainability is about doing all that we do today as societies and economies with three considerations in mind:

- Environmentally - ensuring that resources are not consumed faster than they can be replenished

- Economically - supporting prosperity and growth and

- Socially - respecting the values, culture and human needs of communities.

Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs. Seen as the guiding principle for long-term global development, sustainable development consists of three pillars - economic development, social development and environmental protection.

Role if Technology in Sustainable Development

"Technology role in sustainable development" is the role of technology to prevent the 'exploitation' of the resources of the earth purely for wealth and riches. It is to respect the environment and provide a healthy space for those who reside here. It is to make sure we know when enough is enough.

The right technologies to make development sustainable are already available today – the challenge is deploying them in the right way. In this context the key challenge is to create links between the people with the ideas, those working on the ground with the local knowledge of how it might work and the financers to back them.

Technology as a Driving Force for Sustainable Development

The complexity of the interrelationships between environmental, economic and social changes makes it very difficult to develop promising strategies to deal with them. Although technology has often been regarded as the source of many problems, it nevertheless represents one of the key opportunities to cure them through a number of channels.

The importance of technology innovation for economic sustainability in terms of wealth creation and competitiveness is undisputed, both by increasing productivity and by providing new products. In practice, however, economic growth has rather stagnated in the most advanced countries, despite great technology advances.In the last twenty years, many improvements have been achieved towards environmental by means of technology responses. The reduction of SO_2 and other emissions, the stabilisation 5of energy consumption, the introduction of the catalyst for cars or the improvements in fuel efficiency of many applications are just a few examples. The initial add-on or end-of-pipe technologies have been increasingly replaced by more integrated solutions under the headline of "clean technologies", reducing further the environmental impact. Once this is widely achieved, the next target will be to introduce technological solutions which do not even contain the risk and the possibility to create direct or secondary environmental problems.

The third sustainability dimension- social sustainability – has not fully benefited from the process of technological change during the last years. Due to the inter-relatedness mentioned above, this has started to represent a major obstacle to the achievement of environmental and economic sustainability.

So, whereas some optimism seems to be justified with regard to the beneficial role of technological innovation for environmental sustainability and growth, it becomes also evident that we have not yet been able to develop technologies which fulfil sustainability in its broader sense. The development of such "sustainable technologies" should be the priority for the next years.

The Potential of New Technologies for Sustainable Development

Technology is a double-edged sword. It is both a cause of many environmental problems and a key to solving them. It is a matter of fact that the technologies of the past, still dominating in transport, energy, industry and agriculture, are undermining our basic life supporting systems – clean water, fresh air and fertile soil. However, in each of these sectors there are new technologies available or emerging that may, if widely used, essentially solve the environmental problems.

Thus, new technologies have the potential to

contribute to a decoupling of economic growth from pressure on natural resources. The fact is that we face a choice between technological change at historically unprecedented rates or a change in atmospheric composition unlike any experienced since the dawn of humanity. During the 1990s we have seen a substantial diffusion of renewable energy and transport technologies and further progress in industry and agriculture technology, not least biotechnology. The most promising for immediate investment is energy saving technologies in housing and the tertiary sector. A systematic introduction of best available technology could reduce the use of energy with 20-50 per cent. New technologies for waste management offers a great potential; the most recent investment in this sector shows a utilisation of more than 90 per cent of the energy content of waste. Even more fundamental are new technologies for "up-stream" resource management in industry, offering strong synergies for productivity in production, quality in goods and services and efficiency in the use of natural resources. In this way a dematerialisation can be brought about in a larger scale. In agriculture organic farming is increasing with 20 per cent a year, in spite of subsidies to traditional, non-sustainable farming methods.

Yet, in other cases the growth is not self-sustained. There are still significant obstacles to be overcome to reach the stage where the diffusion of renewable energy technologies is independent of government interventions and where these technologies have made a major inroad into the energy market. The extent to which more efficient technologies will be adopted by the market depends largely on the relative future price relations between different sources of energy, government policies to benchmark or to set standards for eco efficiency and voluntary commitments by industries. It is also of vital importance to consider consumer's preferences for eco efficient products as well as consumer protection.

Objectives

1. To study the role of Technology for sustainable development

2. To assess the contribution of Government and Society in promoting new technology for sustainability

Research Methodology

The empirical research has been carried out to find the role of Technology for sustainable development and to assess the contribution of both Government and Society in promoting new technology for sustainable development.

Sample & Sampling technique

The Sample size comprised 439 Scientists working at different levels from 'B' to 'G' of a Research and Development organization involved in development of critical technologies for Defense Services in India. Scientist 'B' being the young & at low level are working directly on Technology development with creative mind. Scientist 'G' being the senior & at higher level with vast experience of nearly 30 years and mostly heading a Research & Development organization. **Stratified random sampling** technique is used in the current study.

Data collection

Primary data was collected through well structured questionnaire covering key questions. 457 responses received and 18 failed data integrity test. Total 439 responses were considered.

Analysis and Interpretation

Chart 1 : Respondents Profile

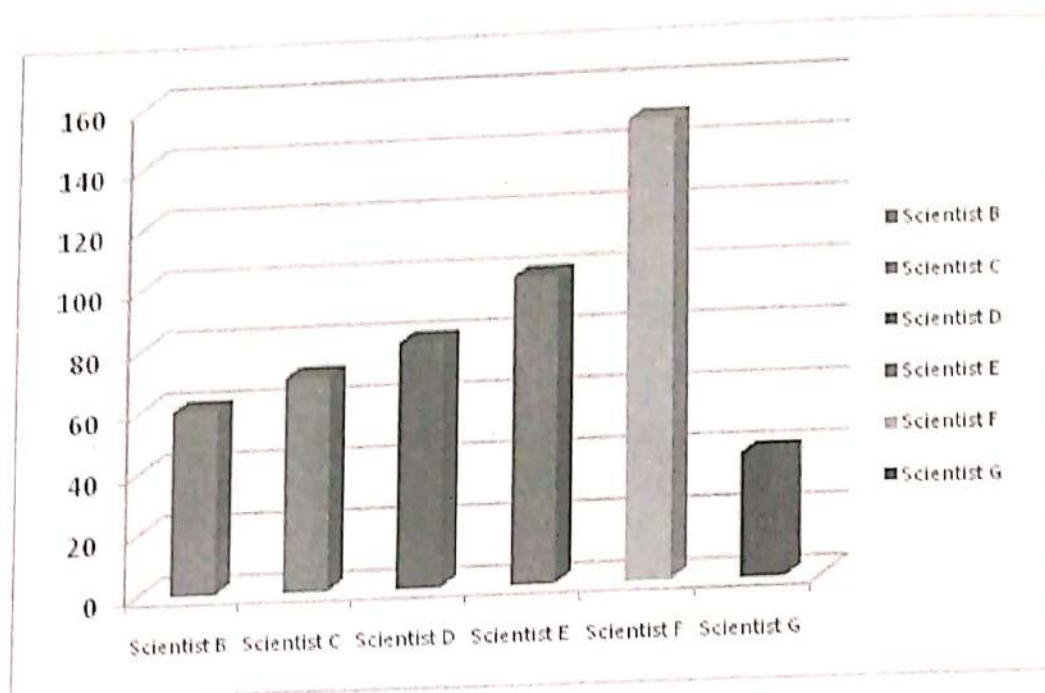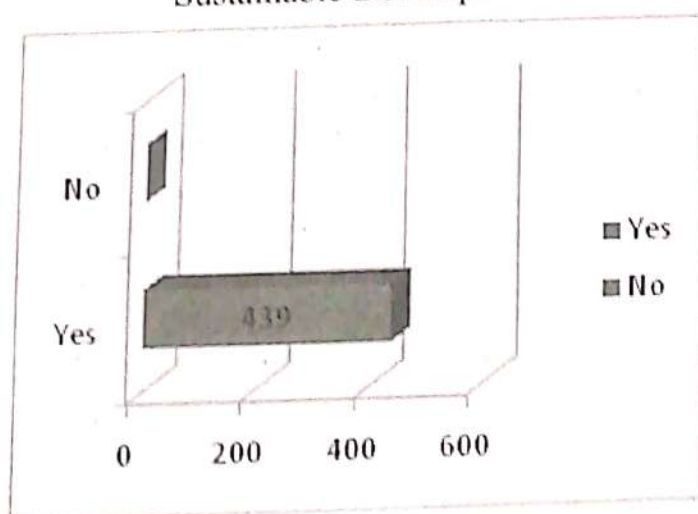Chart 1 : Respondents Profile

Chart 2 : Need of Technology for Sustainable Development

Source: Primary Data

All the (100%) respondents agreed that there is a need for Technologies for sustainable development. There is a strong need for Technology for sustainable development and Technology plays a significant role for sustainable growth.
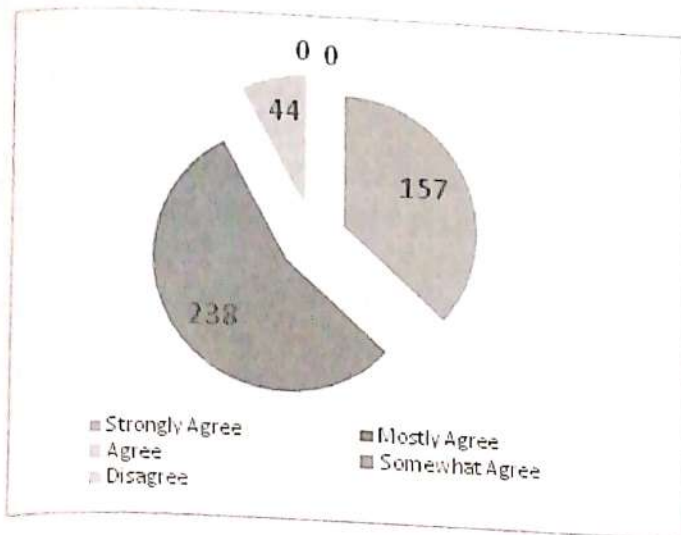
Chart 3 : Sacrifice for Larger Development
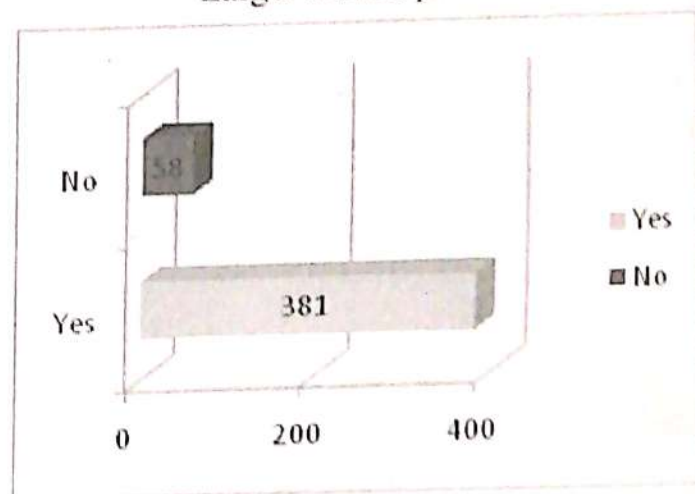
Source: Primary Data

Majority, 87% of respondents do not mind little destruction to nature to achieve larger goals. The people are ready to withstand minor destruction to environment due to Nuclear power plants, etc., establishment of which are essential.
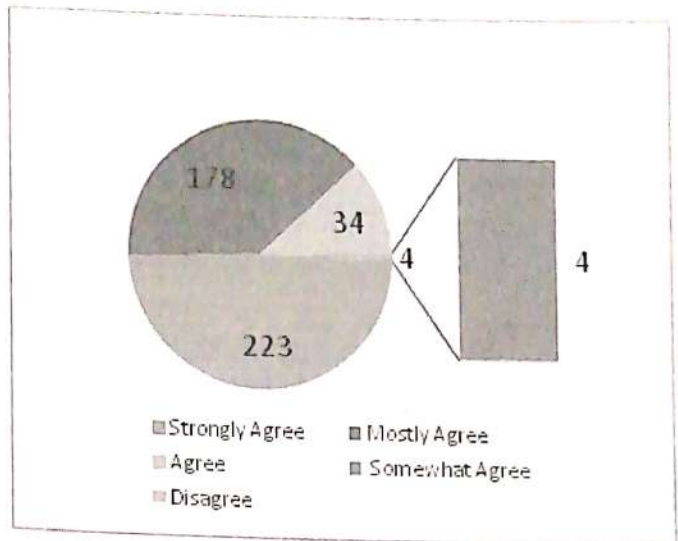
Chart 4: Deterioration of life

Source: Primary Data

90% respondents believe that the man life observed that with extensive utilization of natural resources, environment will be spoiled with release of poisonous gases and make man life difficult.

Chart 5 : Depletion of non renewable energy

Source: Primary Data

Over 91% respondents believe that fossil will deteriorate in another 20 years at this ratef u e l will not last beyond 30 years. It should of exploitation of natural resources. It can be noted that non renewal energy sources like fossil fuel (Petroleum products) will exhaust rapidly in 30 years.
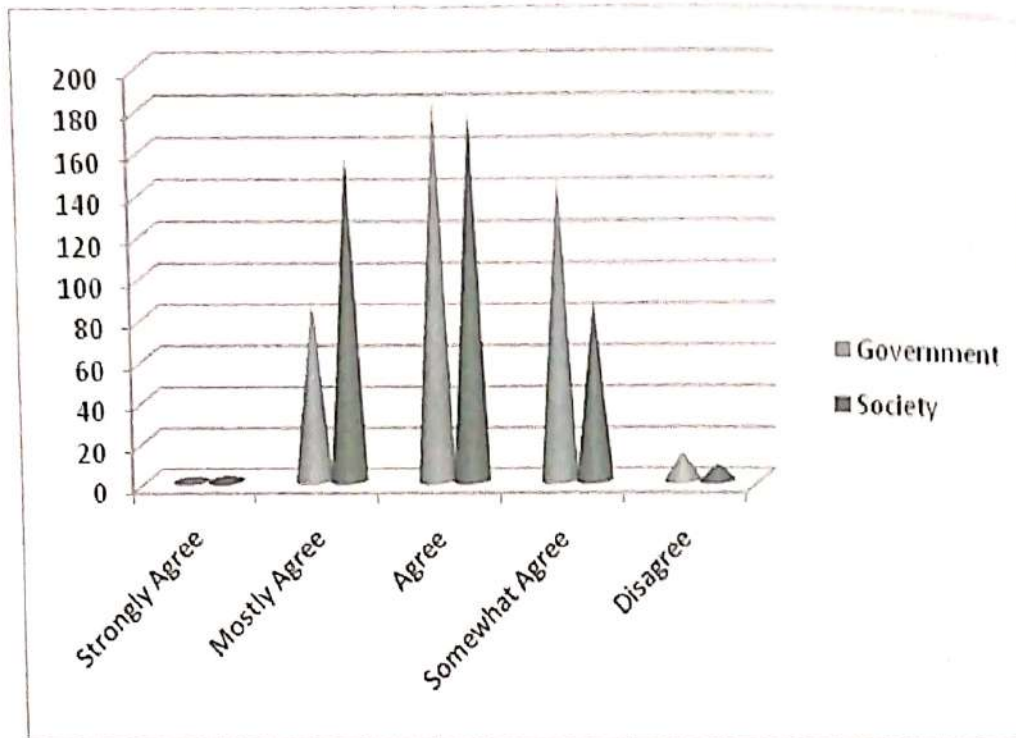
Chart 6:Sacrifice for future by changing life style
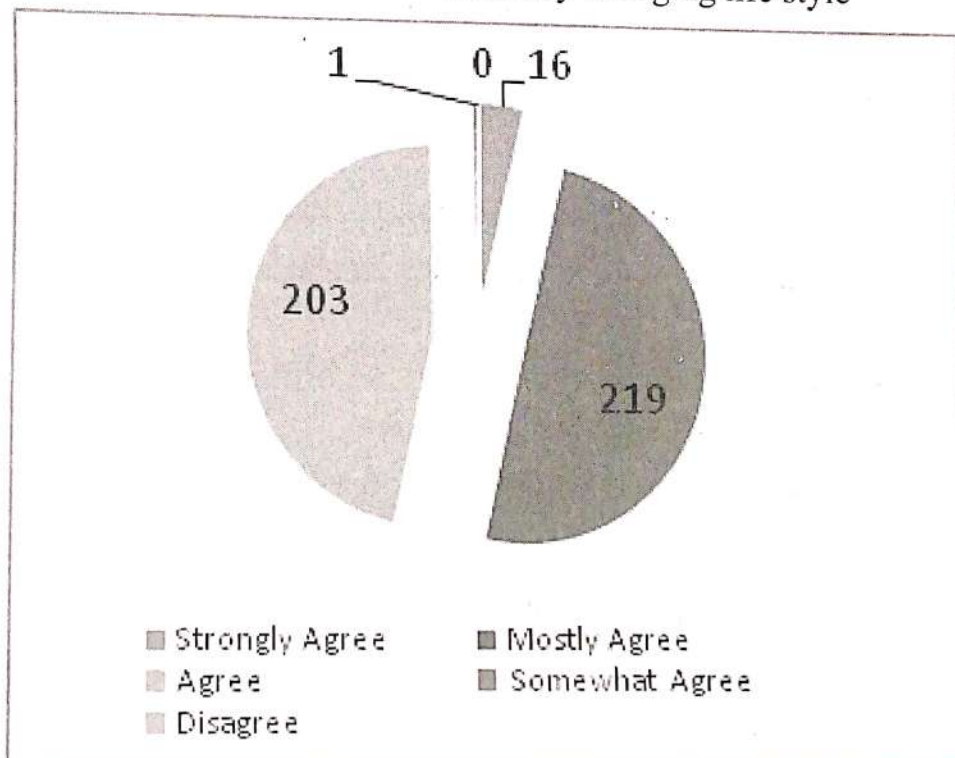
Source: Primary Data

96% of the respondents are willing to sacrifice for the sake of future by changing their life style. It can be said that the respondents are willing to change their life style for sustainable development.

Source: Primary Data

91% of respondents agree that the Government has done little to promote new technologies for Sustainable development and almost same percentage of respondents' opinion that Society has not done enough towards sustainable development. Most of the respondents agree that both Government and Society have not taken enough action for promoting technologies for sustainable development. Respondents expect more and strong actions by both agencies towards sustainability.

Hypothesis

H0 = There is no relationship between technology and sustainable development.

Ha = There is a relationship between technology and sustainable development i.e., technology plays an important role in sustainable development.

The responses obtained for perception of scientists on "role of technology for sustainable development" has been tabulated in Table 1 as shown below.

Table 1 : Perception on role of Technology for sustainable development

Technology role	Sustainable development		Total
	High	Low	
High	150	75	225
Low	89	125	214
Total	239	200	439

Since the sample has been selected on random and data is nominal Chi - Square test is used as a test of significance.

The calculated value of χ^2 27.78 is more than the Table value of χ^2 3.841 at 0.05 Significance level and d.f. = 1. Hence, the Null hypothesis H0 is rejected. Alternate Hypothesis Ha is accepted. i.e., there is a significant relationship between technology and sustainable development. Technology plays an important role in sustainable development.

Hypothesis

H0 = Both Government and Society taking little (No) actions in creating sustainable technologies

Ha = Both Government and Society taking more actions in creating sustainable Technologies.

F - test statistic has been considered appropriate to test the above hypotheses. All the preconditions of F- test i.e., normality of the population, random drawing of samples and independent observations are fulfilled.

Since the calculated 'F' value 0.9856 is less than the Table value 1.170416, the Null Hypothesis is accepted i.e., Both Government and Society are taking little (No) actions in creating sustainable technologies.

Major Findings

- There is a need for Technology for sustainable development and Technology has key role in sustainable growth.

- There is a very strong need for developing and utilising technologies for sustainable development.

- Present generation is willing to undergo moderate sacrifices for larger development.

- There is willingness among respondents to change their life style for sustainable development.

- Both Government and the society need to take strong action for towards sustainable development. The actions already taken are inadequate.

Limitations

Although, meticulous care has been taken in each and every aspect of the study, certain limitations are likely to be there in the study.

1. Since the study is sample based, only one section i.e. Scientists who have deep knowledge of the problem are considered, the findings cannot be generalised for the entire population (Society).

2. Despite the care taken to understand the feelings and opinions of the respondents, some articulation error may have crept into the study.

3. Few respondents were hesitant to give details.

4. There might be a sense of bias crept in answers given by the respondents

Conclusion

Technology plays a pivotal role in sustainable development of mankind and there is an overwhelming belief that there is a strong need for adopting Technological practices which are sustainable and both Government and the Society needs to take strong actions for achieving this. Also, there is a stronger perception for jettisoning eco-unfriendly technologies and a vast majority are willing to undergo sacrifice for achieving sustainable development.

Recommendations

1. Government and Society strongly to encourage development of technologies for sustainability

2. A calibrated approach towards reducing eco-unfriendly activities as pollution, use of plastics, etc., to be adopted.

3. Since the study had indicated that respondents are willing to undergo sacrifice, we may think of action plan for phasing out fossil fuel dependence and encourage re-generative technologies based on solar, wind, water power etc.,

4. Government to formulate eco-friendly schemes and recognize efforts towards sustainable development by implementing award system.

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