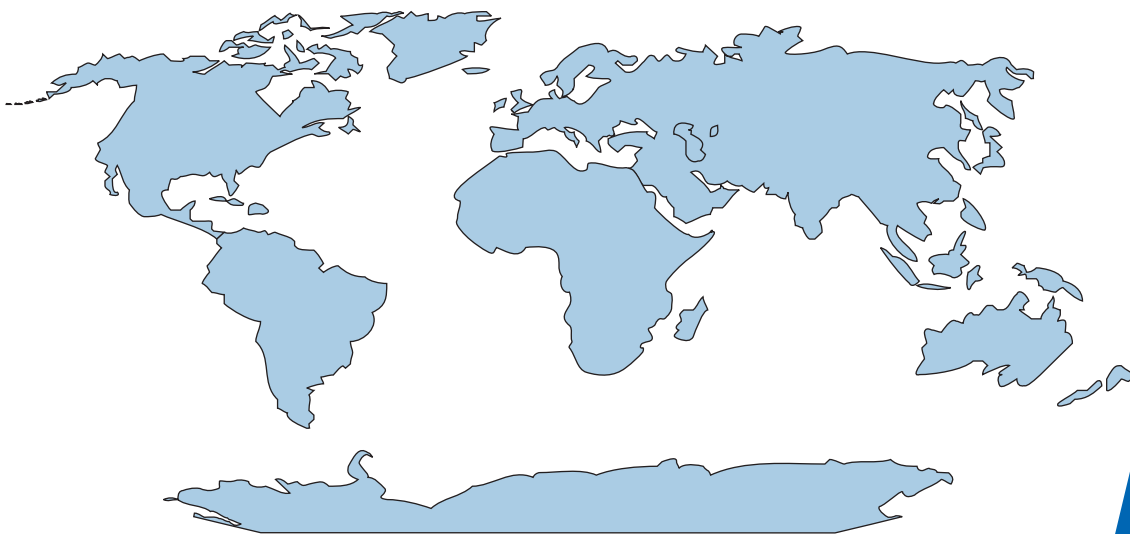


# **INTERNATIONAL JOURNAL OF RESEARCH IN MANAGEMENT & SOCIAL SCIENCE**



**Empyreal Institute of Higher Education**  
**Guwahati**  
[www.empyreal.co.in](http://www.empyreal.co.in)

**Volume 2, Issue 2 (II)**  
April - June, 2014

# International Journal of Research in Management & Social Science

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**Volume 2 , Issue 2 ( II ) : April - June 2014**

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## CONTENTS

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### ***Research Papers***

- TEAM LEADER BEHAVIOR AND TEAM EFFECTIVENESS IN INFORMATION TECHNOLOGY SECTOR 1 -11
- Dr. Raja Sekhar Padala**
- A COMPARATIVE STUDY OF HOME LOAN SCHEME OF PVT.SECTOR BANK AND PUBLIC SECTOR BANK (WITH SPECIAL REFENCE TO SBI AND HDFC) 12 - 21
- Vishal Geete and Anshu Thakur**
- UNDERSTANDING MARKET VOLATILITY: A STUDY OF INDIA VIX 22 - 26
- Dr. Anil Kothari and Swati Dugger**
- WOMEN ENTREPRENEURSHIP DEVELOPMENT AS CORPORATE SOCIAL RESPONSIBILITY INITIATIVE – THE CASE OF CORPORATES 27 - 36
- V. Shugufta Yasmeen, Dr.B.Gangaiah and Dr.Y.Subbarayudu**
- A STUDY ON THE IMPACT OF CERTAIN VARIABLES ON THE WORK-LIFE BALANCE OF WOMEN ACADEMICIANS 37 - 45
- Uma.M.R.**
- CORPORATE BEHAVIOUR REGARDING SOCIAL AND ENVIRONMENTAL RESPONSIBILITY (CSER) 46 - 54
- Rama Bansal**
- JIT PURCHASING MODEL USING HARRIS FORMULA 55 - 61
- Kavita A. Dave**
- EMPLOYEE RETENTION STRATEGIES 62 - 69
- Sandeep Bansal**
- COAL SECTOR: CHALLENGES AND OPPORTUNITIES 70 – 75
- Vineet Sarawagi and Manmohan Krishna Sarawagi**
- DESIGN OF EARTHING FOR EHV SUBSTATION 76 – 81
- K. T. Venkatraman and K. T. Meenaabarna**

IMPROVEMENT OF POWER QUALITY IN REACTIVE POWER USING FC-TCR CIRCUITS	82 - 89
<b>K. T. Venkatraman</b>	
EMPLOYABILITY OF WOMEN IN INDIAN ARMY	90 - 94
<b>Dr. Inderjeet Singh</b>	
EXPLORING THE IMPACT OF SOCIAL MEDIA ON SOCIAL CAPITAL AND WELL-BEING: A SOCIOLOGICAL PERSPECTIVE	95 - 100
<b>Dr. Gulab Pathan</b>	

## TEAM LEADER BEHAVIOR AND TEAM EFFECTIVENESS IN INFORMATION TECHNOLOGY SECTOR

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### ABSTRACT

*The present study was conducted to examine leader behavior and team effectiveness in the Information Technology sector. This sector is characterized by rapidly changing information systems and team work. The leaders of such teams are required to possess skills that would enable them to make the teams effective. The study was conducted on a sample of 59 team leaders from various organizations in this sector. They were administered scales to measure leader characteristics and team effectiveness.*

*The major findings of the study indicate that unmarried team leaders report significantly more sharing and total team effectiveness than their married counterparts. Similar enhanced sharing is seen among team leaders who are graduates. Higher percentage of female leaders report ineffective team culture, average team cohesiveness, well defined authority structure and focused groups authority structure. Team leaders who are single indicate insufficient space but good lighting and ventilation. They also indicate sharing of expertise and average group support system. Post-graduate team leaders report very effective team communication and human resource management. Team leaders with more than 5 years of experience share the same view.*

*The findings are discussed to show that the age, gender, qualification and experience of the team leaders play a significant role in determining the relationship between leader characteristics and team effectiveness.*

*Keywords: IT sector, leadership, leader behaviour, teams, team effectiveness.*

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### INTRODUCTION

Leadership has been defined as the ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of the organizations of which they are members (House, 2004). Organizationally, leadership directly impacts the effectiveness of costs, revenue generation, service, satisfaction, earnings, market value, share price, social capital, motivation, engagement, and sustainability.

Leadership can come from an individual, a collective group of leaders, or even from the disincarnate — if not mystical — characteristics of a celebrity figurehead (compare hero). Yet other usages have a "leadership" which does little active leading, but to which followers show great (often traditional) respect. Followers often endow the leader with status or prestige. Aside from the prestige-role sometimes granted to inspirational leaders, a more mundane usage of the word "leadership" can designate current front-runners that exercise influence over competitors, for example, a corporation or a product can hold a position of "market leadership" without any implication of permanence or of merited respect. Leadership implies a relationship of power — the power to guide others. Most modern business organizations (and some government departments) encourage what they see as "leadership skills" and reward identified potential leaders with promotions. According to Nanus, the forces that shape today's leading-edge organizations and their implications provide the key to visionary leadership. To underline his point we can examine the success-story of Bill Gates: in brief he built Microsoft from the start as a twenty-first-century organization, and he allegedly runs it with a highly-developed sense of visionary leadership.

House and Podsakoff (1994) attempted to summarize the behaviors and approaches of "outstanding leaders" that they obtained from some more modern theories and research findings. These leadership

behaviors and approaches do not constitute specific styles, but cumulatively they probably characterize the most effective style of today's leaders/managers. The listed leadership "styles" cover: Vision, Passion and self-sacrifice, Confidence, determination, and persistence, Image-building, Role-modeling, External representation, Expectations of and confidence in followers, Selective motive-arousal, Frame alignment, Inspirational communication.

## **TEAM LEADERSHIP**

The following are some of the distinguishing features of team leaders:

### **1. Leaders keep the purpose, goals, and approach relevant and meaningful**

All teams must shape their own common purpose, goals and approach. While a leader must be a working member of the team who contributes, she also stands apart from the team by virtue of her position as leader. A team expects their leader to use that perspective and distance to help them clarify and commit to their mission, goals, and approach. Team leaders are not be afraid to get their hands dirty (they lead by example), but always remember what they are paid to do (they get the job done and ensure that their employees grow).

### **2. Leaders build commitment and confidence**

Team leaders work to build the commitment and confidence level of each individual and the team as a whole. Effective team leaders are vigilant about skills. Their goal is to have members with technical, functional, problem solving, decision making, interpersonal, and teamwork skills. To get there, encourage them to take the risks needed for growth and development. They also challenge them by shifting their assignments and role patterns. They get them out of their comfort zone and into the learning zone, but not so far that they go into the fear zone: Staying in their comfort zone makes change and learning difficult for individuals as they have nothing pushing or pulling (motivation). However, if they go too far out of their comfort zone, they enter the fear zone where no learning takes place because of the extreme discomfort. When members enter the learning zone, they become slightly uncomfortable as they are slightly out of place; therefore they change in order to fit in.

### **3. Leaders manage relationships with outsiders**

Team leaders are expected by people outside of the team, as well as the members within, to manage much of the team's contacts and relationships with the rest of the organization. Leaders must communicate effectively the team's purpose, goals, and approach to anyone who might help or hinder it. In addition, they need the courage to intercede on the team's behalf when obstacles that might cripple or demoralize the team get placed in their way.

### **4. Create opportunities for others**

One of the challenges faced by team leaders is providing performance opportunities, assignments, and credit to the team and the people within it. The leaders cannot grab all the best opportunities; they must share it with their team. This will help the leaders to fulfill one of their primary responsibilities as a leader - growing the team.

### **5. Create a vision**

A vision is the most important aspect of making a team successful. Teams perish when they don't clearly see the vision -- why they are doing what they do and where they are going. A leader must motivate the team toward the fulfillment of the goals. Workers want to be successful and they know the only way to do that is by following and achieving great goals.

## **FACTORS THAT INHIBIT TEAM DEVELOPMENT**

One of the main inhibitors of a team obtaining its goal optimally is knowledge hoarding rather than knowledge sharing. There are many cultural factors that inhibit knowledge transfer. The most common of these frictions include (Davenport & Prusak 1998):

- Lack of trust

- Different cultures, vocabularies, & frames of reference
- Lack of time and meeting places; narrow idea of productive work
- Status and rewards go to knowledge owners
- Lack of absorptive capacity in recipients
- Belief that knowledge is prerogative of particular groups
- Not-invented-here syndrome
- Intolerance for mistakes or need for help

A basic tenet of communication theory states that a network's (team) potential benefit grows exponentially as the nodes it can successfully interconnect expand numerically. For example, if two team members share information, both gain information and gain linear growth. And if both then share their new knowledge with other team members, and in turn get questions, amplifications, and modifications, then the benefits become exponential.

### **INFORMATION TECHNOLOGY**

Information technology (IT), also known as Information and Communication(s) Technology (ICT) and Infocomm in Asia, is concerned with the use of technology in managing and processing information, especially in large organizations. In particular, IT deals with the use of electronic computers and computer software to convert, store, protect process, transmit, and retrieve information. For that reason, computer professionals are often called IT specialists/ consultants or Business Process Consultants, and the division of a company or university that deals with software technology is often called the IT department. Other names for the latter are information services (IS) or management information services (MIS), managed service providers (MSP).

Today, Intel Pentium and compatible chips are standard and become parts of other components which are combined as needed. One individual change of note was the freeing of computers and removable storage from protected, air-filtered environments. Microsoft and IBM at various times have been influential enough to impose order on IT and the resultant standardizations allowed specialist software to flourish. Software is available off the shelf: apart from Microsoft Office or IBM Lotus Notes, there are also specialist packages for payroll and personnel management, account maintenance and customer management, to name a few. These are highly specialized and intricate components of larger environments, but they rely upon common conventions and interfaces.

Work in the IT sector is primarily team oriented and each industry sets up several temporary and permanent teams to work on projects. These projects are time bound and require intensive coordination and cooperation. Leaders of such team need to possess special characteristics that would enhance the performance of the team.

### **METHODOLOGY**

The present study was conducted to examine leader characteristics, team effectiveness among employees in the Information Technology sector.

### **OBJECTIVES OF THE STUDY**

The following are the objectives of the present study

1. The demographical and work variables namely, age, gender, educational qualifications, years of experience and designation are not correlated with leadership characteristics
2. The demographical and work variables namely, age, gender, educational qualifications, years of experience and designation are not correlated with team effectiveness
3. Leadership characteristics and team effectiveness are not related with each other

### **Sample**

The study was conducted on a sample of 59 team leaders from various organizations in the Information Technology Sector. The sample included 53 male and 6 female team leaders. While 49 leaders were



married 48 of them have completed their graduation. Finally 49 of them have worked in their organizations for 1 to 5 years and 48 of them are in the Low or Middle management levels. These executives were administered the scales either personally or by email.

### Questionnaires

Based on the objectives of the present study two types of scales were used namely leader characteristics scale, and team effectiveness scale.

#### A. LEADER CHARACTERISTICS SCALE

This scale was developed on the basis of characteristics identified in the previous studies. The schedule includes 22 Likert-type items which with a 5 point response category

Scoring: The items had a 5-point response category ranging from Maximum to Minimum which was assigned scores on the basis of the item. The total of the items was estimated and this was termed as Leader Characteristics score. High score more of this dimension.

#### B. TEAM EFFECTIVENESS SCALE

The 20 item Team Effectiveness Scale developed by Dhar and Dhar (2001) was used in the present study. The scale has three factors, namely, dependability, cooperation and sharing.

**1. Dependability.** The 8 items in this factor measure caring, openness, truthfulness, trust, consensus, building on each others' contribution, listening, fairness and justice.

**2. Cooperation.** This factor has 11 items and is a composition of team commitment, conflict resolution, listening to new ideas, freedom to express feelings, process issues, and cooperation, accepting challenging tasks, goal achievement, and receptivity to new ideas, ownership and ownership decisions.

**3. Sharing.** The factor of sharing is measured by a single item that is composed of the feelings of being not too possessive about territory or information.

Scoring: Each items which is checked as always, often, sometimes, seldom or never awarded the score 5, 4, 3, 2 and 1 respectively.

Reliability: The reliability of the scale was determined by the split-half reliability coefficient, corrected for full length, on a sample of 350 subjects. The reliability coefficient was found to be 0.91 ( $p < 0.001$ ) measuring internal consistency.

Validity: Besides face validity, as all items of the scale are related to the concept of team effectiveness, the scale has high content validity. In order to determine validity from the coefficient of reliability (Garrett, 1966), the reliability index was calculated. The later has indicated high validity an account of being 0.95. The correlation between individual item scores and total score of the scale was also determined. Since item-total correlation of all the items was found to be significant, therefore all the twenty items were retained in the final form of the scale.

**Demographic and work information:** Information regarding the age, gender, marital status and educational qualifications of the sample was collected. Age was measured in number of years and marital status was measured by considering whether the team leader was either married or single. Educational qualifications were measured by considering if the team leaders were either graduates or post-graduates. The team leaders' experience was measured by taking into consideration if the employees had less than or more than 5 years of experience. Information regarding whether the employees belong to the top or middle and low management levels was also obtained.

**Analysis of data:** The data obtained from the sample of team leaders was analyzed to examine the influence of demographic variables on leadership characteristics and team effectiveness. The relationship between leader characteristics and team effectiveness were examined. The data was also analyzed to prepare profiles of leaders of high and low effective teams. Necessary statistics were applied to obtained information regarding these issues



## **RESULTS AND DISCUSSIONS**

The results of the study are presented in three sections dealing with team leader characteristics and team effectiveness.

### **Section 1: Leader characteristics**

This section provides relating to the influence of demographic and work related variables on leader characteristics. It can be observed from table 1 that none of the demographic and work variables have a significant influence on leader characteristics. Liden (1985) also found that male and female managers did not differ with respect to age, education, career orientation, and organizational commitment, Korac-Kakabadse and Myers (1998) report no significant gender differences in the majority of measured characteristics namely management style, work-related values, adoption of information technology, perceived organizational morale, family/work conflict and personal, work and family satisfaction

### **Section 2: Team effectiveness**

This section includes findings regarding the influence of demographic and work related variables on team effectiveness. The results are presented in tables 2 to 6. It can be noted from the tables that unmarried team leaders report significantly more sharing and total team effectiveness than their married counterparts. Similar enhanced sharing is seen among team leaders who are graduates. Cummings and Jonathan (2004) also showed that external knowledge sharing was more strongly associated with performance when work groups were more structurally diverse. Baba, Gluesing, Ratner and Wagner (2004) report that increase in shared cognition alone are not sufficient to account for performance gains. They suggest that it may be necessary not only to increase the sharing of cognition, but also to reverse a pattern of increasing divergence that can result from rejection of key knowledge domains.

### **Section 3: Team effectiveness and leader characteristics**

The sample of team leaders were divided into two groups on the basis of quartile scores on team effectiveness total score. These groups were termed as Low effective (n=15) and High effective (n=17) teams. The demographic and work characteristics of these two groups of leaders were compared along with their leadership characteristics and the results are presented in tables 7 and 8.

## **PROFILES OF LEADERS OF LOW AND HIGH EFFECTIVE TEAMS**

The profiles of the leaders of the Low and High teams were prepared by comparing the two groups on the demographic and work characteristics. The difference in the relative percentages between the two groups was taken to prepare the profile. Table 7 indicates that leaders of High effective teams are predominantly male (94%), unmarried (23%), have studied above degree (23%), are working for less than 5 years (88%) and are younger.

## **LEADER CHARACTERISTICS OF LOW AND HIGH EFFECTIVE TEAMS**

The leader characteristics of High and Low effective teams were identified by comparing the two groups on the percentage on the response category that has been selected by the majority of the leaders in each group. A comparison of the groups was done to identify the characteristics. These are presented in table 8. It can be noted from the table that more number of leaders of high effective teams display maximum ability to work with and lead teams. They possess above average ability in communicating with their subordinates on issues related to work and personal issues. They indicate maximum ability to build confidence. They also have above average ability to connect people, processes and technology to create excellence in performance. Though their personal influence is average; they are above average when it comes to judicious use of members as developers.

Wynekoop (2000) found that the characteristics and behaviors distinguishing exceptional personnel are: the ability to abstract business problems; creativity; technical and business knowledge; the ability to work with, and lead, teams; analytical and logical abilities; and high levels of self-motivation, dependability and organization.

## SUMMARY

The present study was conducted to examine leader behavior and team effectiveness in the Information Technology sector.

The study was conducted on a sample of 59 team leaders from various organizations in this sector. They were administered scales to measure leader characteristics and team effectiveness. The major findings of the study are the following:

### Leader Characteristics:

- None of the demographic and work variables have a significant influence on leader characteristics.

### Team Effectiveness:

- Unmarried team leaders report significantly more sharing and total team effectiveness than their married counterparts.
- Similar enhanced sharing is seen among team leaders who are graduates.

### Profiles of leaders of Low and High effective teams

- Leaders of high effective teams are predominantly; Male (94%), Unmarried (23%), Studied above degree (23%), Working for less than 5 years (88%) and Younger.

### Leader characteristics of Low and High effective teams

- More number of leaders of high effective teams display; Ability to work with and lead teams; above average communication skill; Ability to build confidence; Connect people, processes and technology to create excellence in performance; Above average personal influence and Above average judicious use of members as developers.

## CONCLUSIONS

Sharing of information and materials seems to be distinguishing features of team leadership and team effectiveness in the Information Technology sector. This sharing is more among team leaders who are unmarried and who are graduates. These findings suggest that employees, who are single, might spend more time talking with their team members regarding the work and in the process share information and materials. Gender has a role in the team leader's perception of working conditions. Female team leaders tend to perceive a more positive and encouraging working conditions as opposed to their male counterparts. Team leaders from the middle and lower management levels indicate more positive physical and task related working conditions while those from the top level indicate more socio-psychological conditions of work.

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**Table 1: Demographic, work variables and Leadership**

		Mean	S.D	t-value
<b>Gender</b>	N			
Male	53	88.21	4.64	.546
Female	6	87.17	4.40	
<b>Marital Status</b>				
Married	49	88.43	4.35	1.027
Unmarried	10	86.50	5.60	
<b>Qualifications</b>				
Graduation	48	87.92	4.21	.506
Post graduation	11	88.91	6.19	
<b>Experience</b>				
< 5 years	49	87.86	3.98	.629
> 5 years	10	89.30	7.02	
<b>Management level</b>				
Top	11	88.00	3.52	.098
Middle or Low	48	88.13	4.84	

**Table 2: Gender and Team Effectiveness**

	Male (n = 53)		Female (n = 6)		t - value
	Mean	S.D	Mean	S.D	
<b>Dependability</b>	20.02	2.82	18.50	3.39	1.056
<b>Cooperation</b>	22.58	3.54	19.83	3.76	1.707
<b>Sharing</b>	2.83	.80	3.17	.41	1.684
<b>Total score</b>	45.43	5.26	41.50	6.89	1.683

**Table 3: Marital Status and Team Effectiveness**

	Married (n = 49)		Unmarried (n = 10)		t - value
	Mean	S.D	Mean	S.D	
<b>Dependability</b>	19.57	2.91	21.30	2.45	1.965
<b>Cooperation</b>	22.00	3.62	23.80	3.46	1.488
<b>Sharing</b>	2.80	.82	3.20	.42	2.282**
<b>Total score</b>	44.36	5.42	48.30	4.97	2.25*

Note: \* =  $p < .05$ ; \*\* =  $p < .01$

**Table 4: Qualification and Team Effectiveness**

	Graduation (n = 48)		Post Graduation (n = 11)		t - value
	Mean	S.D	Mean	S.D	
<b>Dependability</b>	19.92	2.77	19.64	3.50	.248
<b>Cooperation</b>	21.88	3.41	24.18	4.12	1.727
<b>Sharing</b>	3.00	.71	2.27	.79	2.813*
<b>Total score</b>	44.79	5.21	46.09	6.83	.70

Note: \* =  $p < .05$ ; \*\* =  $p < .01$

**Table 5: Experience and Team Effectiveness**

	1 – 5 Years (n = 49)		> 5 Years (n = 10)		t – value
	Mean	S.D	Mean	S.D	
<b>Dependability</b>	19.98	2.84	19.30	3.23	.618
<b>Cooperation</b>	22.37	3.67	22.00	3.59	.294

<b>Sharing</b>	2.94	.75	2.50	.85	1.517
<b>Total score</b>	45.28	5.30	43.80	6.59	.669

**Table 6: Management level and Team Effectiveness**

	<b>Top (n = 11)</b>		<b>Middle / Low (n = 48)</b>		<b>t – value</b>
	<b>Mean</b>	<b>S.D</b>	<b>Mean</b>	<b>S.D</b>	
<b>Dependability</b>	19.82	2.18	19.88	3.05	.072
<b>Cooperation</b>	23.09	4.28	22.13	3.49	.698
<b>Sharing</b>	2.55	.69	2.94	.78	1.660
<b>Total TE score</b>	45.45	4.71	44.93	5.71	.314

**Table- 7: Profiles of leaders of High and Low Effective Teams**

		<b>TES</b>			
		<b>Low (n = 15)</b>		<b>High (n = 17)</b>	
		<b>n</b>	<b>%</b>	<b>N</b>	<b>%</b>
<b>Gender</b>	Male	12	80.0	16	94.1
	Female	3	20.0	1	5.9
<b>Marital status</b>	Married	14	93.3	13	76.5
	Unmarried	1	6.7	4	23.5
<b>Qualification</b>	Graduation	13	86.7	13	76.5
	Above degree	2	13.3	4	23.5
<b>Experience</b>	1 to 5 years	11	73.3	15	88.2
	Above 5 years	4	26.7	2	11.8
<b>Managerial level</b>	Top	2	13.2	3	17.6
	Middle/Low	13	86.7	14	82.4
		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Age</b>		31.60	5.44	29.24	3.72

**Table- 8: Leader characteristics of High and Low Effective teams**

Leader characteristics	Team Effectiveness	
	Low	High
Leader to be agent of change	Above average(46.7)	Above Average(52.9)
Abstracting business problems	Above average(40)	Above average(47.1)
Working with and leading teams	Maximum (52.9)	<b>Maximum(86.7)</b>
Managing emotions	Above average(40)	Average(47.1)
Analytical and logical abilities	Above average(46.7)	Above average(47.1)
Adaptability	Average(40)	Maximum, above average(41.2)
Building and sustaining relationships	Maximum(40)	Above average, average(47.1)
Charisma	Average, Maximum (40)	Above average(41.2)
Communications with subordinates on job-related and personal matters	Above average, average(40)	<b>Above average (82.4)</b>
Building confidence	Maximum (76.5)	<b>Maximum (93.3)</b>
Confidence in and importance of self	Maximum, Above average(40)	Above average(41.2)
Managing conflicts	Maximum, Above average(40)	Above average(41.2)
Connecting people, processes and technology to create excellence in performance	Above average(53.3)	<b>Above average (66.7)</b>
Development of an administrative environment	Above average(53.3)	Above average(47.1)
Empowering team members	Maximum(60)	Above average(64.7)
Facilitation skills	Maximum, Above average(40)	Maximum(41.2)
Identifying and measuring the characteristics of exceptional team members.	Above average(40)	Average(41.2)

Incentive for member participation	Maximum, above average, average(33.3)	Above average(41.2)
Personal Influence	Average (40)	<b>Above average(58.8)</b>
Judicious use of members as developers.	Average (40)	<b>Above average(52.9)</b>
Power motive.	Above average(40)	Above average, average(35.3)
Strategic behavior	Average(40)	Average (41.2)



## A COMPARATIVE STUDY OF HOME LOAN SCHEME OF PRIVATE SECTOR BANK AND PUBLIC SECTOR BANK (WITH SPECIAL REFERENCE TO SBI AND HDFC)

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### ABSTRACT

*The study has been conducted with purpose of finding out cost of home loans provided by the bank. Which bank provide better loan schemes. Satisfaction level of customers about home loans. Problems faced by customers in obtaining the home loan. Analyze the home loan scheme by pvt. And public sector bank. Consumer perception about the home loan of Pvt. Sector and public sector bank. For the purpose of study sample size of 100 respondents were taken . In 100 respondents 50 respondents from Pvt. And 50 from public. The samples will be the peoples of age group lying between eighteen to thirty years. The sample will be taken in the form of strata based on age, sex, and income group. For the purpose of analysis t-test and factor analysis has been applied. Even though there is myth that private bank charges heavy amount as processing fee but the study reveals that people prefer HDFC bank than SBI because of the time period required by the HDFC for the disbursement of loan not even this only they are also very customer friendly.*

*Key Words : Home loan , Interest rate, customer, Perception, satisfaction.*

### INTRODUCTION

With the current property revolution the real estate rates are at all time high. Thus with the increase in demand for property, the demand for home loans in India has increased tremendously. Home loans are being drawn by number of people with varied demographics. But, even after having such a huge demand for home loans the financial and banking sector haven't come up with a competitive and systemized procedure so that they can reach the potential and genuine customers.

Home without equity is a dream now a days for a lay men of middle income groups. When it comes to the mind of purchasing a house the first thing comes to mind is from where one should borrow the amount. Whether from any nationalised bank like SBI or from some pvt sector bank like HDFC etc. Buying a home is one of the serious decisions a person has to take in his life. It is difficult to find someone who pays the entire cost of home at one shot. A home loan is an essential part of any home buying endeavor. Taking a home loan is a long process, which involves many stages. The key to getting your home loan in a smooth way is being familiar with the entire home loan process.

Even though there are number of banks and financial institutions offering home loans and claiming the cheapest and least documentation. It is a tough task to decide to whom one should contact, who to write, who will provide the loan easily with less documents and speedily. Before applying for home loan one should consider the following points:

1. The Home loan interest rate offered by the bank should be equal to or is less than the average prevailing home loan interest rates.
2. What additional charges does the bank levy apart from the standard filing charges.
3. There should not be any hidden charges apart from the standard home loan rate. If there are any hidden charges what are the basis of calculation of these charges?
4. Are there any pre payment charges and if there are how they calculate it.

5. Is there any additional benefit provided by the bank to its borrower, like an additional insurance cover etc. If yes then is there any additional fee charged by the bank for such benefits

The study has been conducted with the following objectives:

- 1) Cost of home loans provided by the bank.
- 2) Which bank provide better loan schemes.
- 3) Satisfaction level of customers about home loans.
- 4) Problems faced by customers in obtaining the home loan.
- 5) Analyze the home loan scheme by pvt. And public sector bank.
- 6) Consumer perception about the home loan of Pvt. Sector and public sector bank.

## **REVIEW OF LITERATURE**

Koray.F et al (1971) had studied about the Interest Rate Volatility and Home Mortgage Loans . they find a positive relationship between mortgage rate volatility and home mortgage loans. Further investigation indicates that this is due to volatility in the bond market. In times of high interest volatility, households disinvest in government securities and invest in real assets, which yield a positive relationship between mortgage rate volatility and home mortgage loans. Susan M. et al. (1991) find that likelihood of delinquency declines with the level of neighborhood housing market activity. Also, likelihood of delinquency is greater for borrowers with low credit history scores and those with high ratios of housing expense to income, and when the property is unusually expensive for the neighborhood where it is located. Roongta H. et al (1994) studied on “home loan analysis” that the first thing that customers look for is the interest rate. However what most consumers don’t realize is that the lender should not be chosen on interest rate alone. Mitra R et al (1997) studies on “home loan market in india” that the home loan market has grown at a compounded rate of over 40% over the last 4 years. S Agarwal S et al (1997) findings are consistent with their predictions. Firms facing higher rates and fees have smaller credit lines. Firms with higher growth commit to larger lines of credit and have a higher rate of line utilization. Firms experiencing more uncertainty in their funding needs commit to smaller credit lines. Almost all firms convert unused credit line portions into spot loans and take out new lines.

Joshi.P (1998) researched on “floating rate of home loan” that floating rate interest would continue to be the dominant preference of the customer. Ranjan.V.S (1999) concluded that a hike in rates depends on each lender’s funding composition and timing. Puri.L (1999) competitive market of car loan that emerging markets are following developed market in a consumer revolution that has intensified over the last 10 years in east asia. Moriizumi.Y(1999) Wealth effects on private mortgage debt, likelihood of borrowing, and housing consumption are not elastic. On the other hand, a change in housing consumption affects the likelihood of borrowing elastically much more than the private mortgage amount of borrowers. Housing and private mortgage markets fluctuate very closely with the number of participants in the mortgage market. Therefore, the number of housing starts is linked strongly to the private mortgage market. White M. J. et al (2000) they developed a combined model of debtors' decisions to file for bankruptcy and to default on their mortgages and show that the theory predicts positive relationships between both the homestead and personal property exemption levels and the probability of borrowers being denied mortgage (secured) and home improvement loans. Menon.S. (2002) in the last one year there was a trend of floating rate home loans being more popular as compared to the fixed rate loan. Gwilym B.J.et al (2005) Countries that limit deductibility create a debt tax penalty that presumably leads households to shift from debt toward equity financing. The greater the shift, the less is the tax revenue raised by the limitation and smaller is its negative impact on housing demand. LaCour M et al(2007) had studied about the Economic Factors Affecting Home Mortgage Disclosure Act Reporting. e. These impacts come in several forms. They include a reduction in the demand for homeownership, a decline in real estate prices and increased foreclosure expenses. LaCour-Little M (2007) Empirical results show that individual credit characteristics and financial factors, including pricing, generally drive product choice, with some variation evident when loans are originated through brokers. Results also indicate that targeted conventional programs effectively compete with government-insured products in the LMI segment. David

C. (2008) concluded that many states imposed moratoria on both farm and nonfarm residential mortgage foreclosures. Although moratoria reduced farm foreclosure rates in the short run, they appear to have also reduced the supply of loans and made credit more expensive for subsequent borrowers. The federal government took a number of steps to relieve residential mortgage distress and to promote the recovery and growth of the national mortgage market. Vincent W. Yao et al (2009) results contribute both to the literature on refinancing behavior and the role of house price appreciation in providing funds that may be used for consumer spending or other purposes. Devlin F.J. et al (2002) the study shows that choosing a home loan institution on the basis of professional advice is the most frequently cited choice criterion, closely followed by interest rates. Differences in the importance of choice criteria with respect to gender, class, household income, educational attainment, ethnicity and financial maturity are apparent. Hamind A et al (2011) The results indicate that the shariah principle, fast and efficient services, price, bank reputation, and terms and conditions of product flexibility are the five most important factors considered by customers in choosing Islamic mortgages. Yard S (2004) experiments show that the duration is generally underestimated when only the payment pattern and the interest rate are known. If the FC per month is known the situation improves somewhat, but still the effects on the duration of changing interest rates are underestimated. Minh T.H. Dinh et al (2012) The estimated results show that the main factors impacting on credit cards are disposable income and unemployment rates, while changes in interest rates have no impact on credit card write-offs.

## **METHODOLOGY**

Sample size of 100 respondents will be taken for the current study because it is not possible to cover the whole universe in the available time period. So it is necessary to take the sample size. In 100 respondents 50 respondents from Pvt. And 50 from public. The samples will be the peoples of age group lying between eighteen to thirty years. The sample will be taken in the form of strata based on age, sex, and income group. For the purpose of analysis t-test and factor analysis has been applied.

## **DATA ANALYSIS**

The 8% respondent were from age of 15-25, 46% from the age of 26-35, 32% from the age of 36- 45 respondent was 32% and 14% from the age of 46 and above. Among the respondents there were 22% female and 78% male. There were 28% respondent was businessmen, 68% was service man and 4 were home maker. The income of 6% respondent was less than 2 lack , 64% respondent was between 2 lack and 4 lack, 24% respondent was between 4 lack and 6 lack and 6% respondent was above 6 lack. 17% were associated with the bank from last 1 year or less 56% were more than 1 year but less than 5 year and 27% were more than 5 years. 68% were not faced any kind of problem in getting home loan but 32% faced the problems.

The normality of the data has been checked and it has been found normal ( Pic.01 of Annexure).

## **HYPOTHESIS**

**H01:-**There is no significant difference in interest rate of public (SBI) and private (HDFC) bank.

**H02:-** There is no significant difference in processing time of public (SBI) and private (HDFC) bank.

**H03:-** There is no significant difference in processing charges of public (SBI) and private (HDFC) bank.

**H04:-** There is no significant difference in flexibility in payment(EMI) of public (SBI) and private (HDFC) bank.

**H05:-** There is no significant difference in documentation of public (SBI) and private (HDFC) bank.

**H06:-** There is no significant difference in provide insurance cover of public (SBI) and private (HDFC) bank.

**H07:-** There is no significant difference in margin money of public (SBI) and private (HDFC) bank.

**H08:-** There is no significant difference in transparency in term and condition of public (SBI) and private (HDFC) bank.

**H09:-** There is no significant difference in after sales service satisfaction of public (SBI) and private (HDFC) bank.

**H010:-** There is no significant difference in employee behavior of public (SBI) and private (HDFC) bank.

**H011:-** There is no significant difference in complimentary facility of public (SBI) and private (HDFC) bank.

**H012:-** There is no significant difference in satisfaction with the bank of public (SBI) and private (HDFC) bank.

## **RESULTS AND DISCUSSION**

1. Hypothesis  $H_{01}$  is that there is no significant difference in interest rate of public and private bank is rejected at 5% significance level ( $p=.000$ ). It shows that there is a significant difference in the interest rate of private and public sector bank. It may due to that private sector banks interest rate may be higher or lower than the government sector banks. Generally it happens that the interest rate on the loan of government sector banks are lesser than private sector banks. ( Table 01 Annexure)
2. Hypothesis  $H_{02}$  is rejected at 5% significance level( $p=.000$ ). The result suggests that there is a significant difference in processing time of SBI and HDFC. The time taken by both the banks for processing of the documents differ generally it has observed that government banks are not very aggressive for their business in comparison to private sector banks hence their processing time is more than private sector banks. It may be due to long processing channel or bureaucracy. (Table 02 Annexure)
3. Hypothesis  $H_{03}$  at 5% significance level( $p=.000$ ) has been rejected. This result suggests that there is a significant difference in processing charges of private and public sector banks. The reason may be that the processing charges taken by government sector banks are higher than private sector banks. In competing to the government banks private sector banks offers waiver in processing fees so that can generate good volume of business. (Table 03 Annexure)
4. Hypothesis  $H_{04}$  at 5% significance level( $p=.059$ ) has been accepted. This result suggests that there is no significant difference in the flexibility of payment among both private and public bank. It can be said that both the banks provides same type of flexibility in the payment of EMI. (Table 04 Annexure)
5. Hypothesis  $H_{05}$  at 5% significance level( $p=.000$ ) has been rejected. This result suggests that there is a significant difference among documents required by private and public sector banks. It has seen that public sector banks requires more documents than private sector banks. (Table 05 Annexure)
6. Hypothesis  $H_{06}$ at 5% significance level( $p=.036$ ) has been rejected. There is a significant difference in insurance covered provided by the private and public sector banks it may be due to the sales target on

private sector banks. Private sector banks are generally making compulsory sale to their customers while availing the loan. (Table 06 Annexure)

7. Hypothesis  $H_{07}$  at 5% significance level( $p=.661$ ) has been accepted. This result suggests that there is no significant difference among the private and public bank in case of margin money requirement or amount of finance. They both are more or less providing same amount of finance. (Table 07 Annexure)
8. Hypothesis  $H_{08}$  at 5% significance level( $p=.000$ ) has been rejected. The result suggests that there is a significant difference in maintaining transparency of terms and condition among the private and public sector bank. There are some hidden conditions which the banks don't want or intentionally they are not disclosing it to their customers. (Table 08 Annexure)
9. Hypothesis  $H_{09}$  at 5% significance level( $p=.033$ ) has been rejected. The result suggests that there is a significant difference among the customer satisfaction by after sales service between private and public sector banks. The general observation is that private banks are providing better after sales services than public sector banks. (Table 09 Annexure)
10. Hypothesis  $H_{10}$  at 5% significance level( $p=.006$ ) has been rejected. The result suggests that there is a significant difference of employee behavior between public and private sector banks. Generally the behavior of private sector banks employees are better than public sector banks. (Table 10 Annexure)
11. Hypothesis  $H_{11}$  at 5% significance level( $p=.001$ ) has been rejected. The result suggests that there is a significant difference in complementary facilities between public and private service banks. It has been observed that generally private sector banks provide complementary facilities more than public sector banks. Even private sector banks provides no complementary services to its customers. (Table 11 Annexure)
12. Hypothesis  $H_{11}$  at 5% significance level( $p=.000$ ) has been rejected. The result suggests that there is a significant difference in the satisfaction of customer between private and public sector bank. It has been general observation that the customers of public sector banks are more satisfied than private sector banks. (Table 12 Annexure)

## **CONCLUSION**

The Indian customer has come a long way from purchasing to fulfilling their needs from buying a house. There is scope of exploiting the vast middle income group by releasing loans with special interest rate which would be beneficial to both parties.

After doing a lot of research and studying the materials available on internet, newspapers, magazines and journals. It can be concluded that people prefers HDFC bank more than SBI bank for home loan. As private banks are coming daily in our country still, mostly people prefers government banks for loan specially older persons are more dependent on government banks. It is true that younger population preference is changing and they prefer more private banks because of services and facilities provided by private banks. The interest rate is lower in public (SBI) bank in comparison with private (HDFC) bank but services are not up to the mark.

The processing time of HDFC is less and the processing charges of the SBI are more. SBI is flexible in providing EMI. HDFC requires more margin money, and SBI provides transparency in terms and condition. Customers are satisfied with the employee behavior and after sales service of HDFC bank. HDFC provides some complimentary facilities along with the home loan.



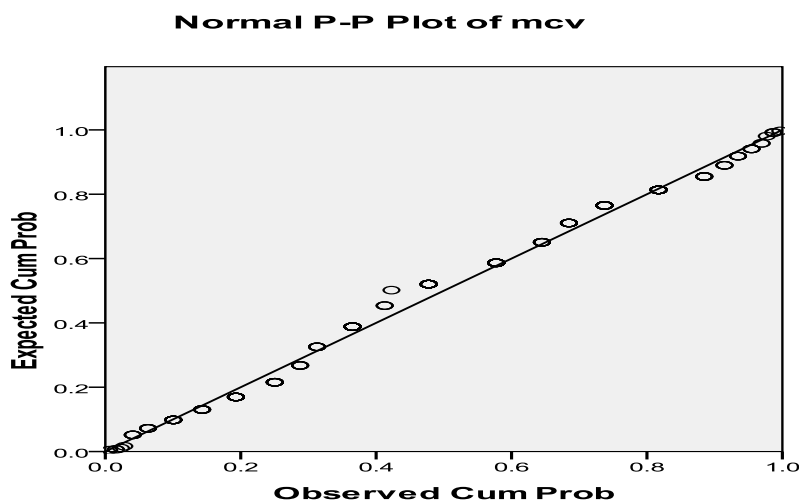
The Public (SBI) bank only provides home loan at low interest rate, therefore customers are attracted towards public bank, as far as other facilities is concerned then private(HDFC) bank is more preferable by the customers. At last I can only say that private (HDFC) bank enjoys leading position in home loan as compared to public (SBI) bank.

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## ANNEXURE



Pic 01

Bank 1=HDFC ; Bank2=SBI



**Table 01**

<b><u>Independent Samples Test</u></b>				
		T	df	Sig.(2-tailed)
Interest rate	Equal variances assumed	-13.066	198	.000
	Equal variances not assumed	-13.066	197.149	.000

**Table .02**

<b><u>Independent Samples Test</u></b>				
		T	df	Sig.(2-tailed)
Processing time	Equal variances assumed	9.941	198	.000
	Equal variances not assumed	9.941	196.163	.000

**Table 03**

<b><u>Independent Samples Test</u></b>				
		T	df	Sig.(2-tailed)
More Processing Charges	Equal variances assumed	-10.458	198	.000
	Equal variances not assumed	-10.458	197.998	.000

**Table 04**

<b><u>Independent Samples Test</u></b>				
		T	df	Sig.(2-tailed)
Equated Monthly Installment	Equal variances assumed	-1.899	198	.059
	Equal variances not assumed	-1.899	197.675	.059

**Table 05**

<b><u>Independent Samples Test</u></b>				
		T	df	Sig.(2-tailed)
Less document	Equal variances assumed	4.329	198	.000
	Equal variances not assumed	4.329	197.697	.000

**Table 06**

<b><u>Independent Samples Test</u></b>				
		t	df	Sig.(2-tailed)
Insurance cover	Equal variances assumed	2.110	198	.036
	Equal variances not assumed	2.110	189.964	.036

**Table 07**

<b><u>Independent Samples Test</u></b>				
		t	df	Sig.(2-tailed)
More margin money	Equal variances assumed	.439	198	.661
	Equal variances not assumed	.439	197.987	.661

**Table 08**

<b><u>Independent Samples Test</u></b>				
		t	df	Sig.(2-tailed)
Transparency	Equal variances assumed	-5.803	198	.000
	Equal variances not assumed	-5.803	187.245	.000

**Table 09: Data Interpretation and Its Values**

<b><u>Independent Samples Test</u></b>				
		t	df	Sig.(2-tailed)
Satisfactory service	Equal variances assumed	2.152	198	.033
	Equal variances not assumed	2.152	183.581	.033

**Table 10:- Data Interpretation and Its Values**

<b><u>Independent Samples Test</u></b>				
		t	df	Sig.(2-tailed)
Employee behavior	Equal variances assumed	2.796	198	.006
	Equal variances not assumed	2.796	186.639	.006

**Table 11**

<b><u>Independent Samples Test</u></b>				
		t	df	Sig.(2-tailed)
Complimentary facility	Equal variances assumed	3.262	198	.001
	Equal variances not assumed	3.262	194.615	.001

**Table 12**

<b><u>Independent Samples Test</u></b>				
		t	df	Sig.(2-tailed)
Satisfaction with the bank	Equal variances assumed	-5.044	198	.000
	Equal variances not assumed	-5.044	197.997	.000

## UNDERSTANDING MARKET VOLATILITY: A STUDY OF INDIA VIX

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### ABSTRACT

*Indian Capital Markets have shown tremendous growth in the post Liberalization era. It remains one of the most resilient globally and poised to be one of the Top destinations for domestic and global businesses to expand and invest into. The recently introduced term named India volatility index (VIX) was launched in April 2008 by national stock exchange (NSE). The current focus on the VIX is due to its inherent property of negative correlation with the underlying price index, and its usefulness for predicting the direction of the price index. The India VIX has helped the traders for their trading calls and for booking their futures and options in order to gain profits it can also be used as effective tool for hedging.*

*If volatility index tends to rise than market will steeply moves upward or downwards cause high volatility and if volatility index declines than there is less volatility in the market this paper will try to correlate the India volatility Index with nifty and find out whether these are correlated or not . And will also focus on India VIX its meaning, usefulness to traders in case of expected volatility in the market, merits and demerits of India VIX. The primary idea is to gauge the market sentiment in order to help the traders so market participant become comfortable with index and help in developing the instrument like India VIX, which will indirectly contribute in development of emerging markets in India*

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### INDIA VIX HISTORY

VIX was first introduced by the Chicago Board of Options Exchange (CBOE) as the volatility index for the US markets in 1993 and it was based on S&P 100 Index option prices. The methodology was revised in 2003 and the new volatility index was based on S&P 500 Index options. CBOE also introduced VIX options and VIX Futures. In India, VIX was launched in April, 2008 by National stock exchange (NSE). The VIX index of India is based on the Nifty 50 Index Option prices.

### INDIA VIX MEANING

Indian volatility index is used to measure the market expectation of near term. This volatility index is computed by NSE based on the order book of NIFTY Options. For this, the best bid-ask quotes of near and next-month NIFTY options contracts which are traded on the F&O segment of NSE are used. India VIX indicates the investor's perception of the market's volatility in the near term i.e. it depicts the expected market volatility over the next 30 calendar days. Higher the India VIX values, higher the expected volatility and vice-versa.

As we understand, volatility implies the ability to change. Volatility index is also termed as Fear Index because when market is highly volatile (moves steeply up or down) the volatility index tends to rise and one becomes more fearful or say careful in the market. Similarly when market is less volatile the volatility index tends to fall.

It is important to understand that VIX is different from NIFTY and NSE price index. India VIX study the dispersion or variance or change and is computed using the order book of the underlying index options and is denoted as an annualized percentage while price index measure the direction of the market and is

computed using the price movement of the underlying stocks. Due to its inherent property VIX has become an indicator of how market practitioners think about volatility. Investors use it to gauge the market volatility and make their investment decisions.

### CALCULATIONS FOR INDIA VIX

India VIX uses the methodology of CBOE, with suitable amendments to adapt to the NIFTY options order book. India VIX is computed using the best bid and asks quotes of the out-of-the-money near and mid-month NIFTY option contracts, which are traded on the F&O segment of NSE. There are several factors which are used to calculate the index. Some important ones are these –

#### Computation Methodology

The formula used in the India vix calculation is:

$$\sigma^2 = \frac{2}{T} \sum \frac{\Delta k_i}{k_i^2} e^{RT} Q(K_i) - \frac{1}{T} \left[ \frac{F}{K_0} - 1 \right]^2$$

Where:

$\sigma$  India VIX/100

$T$  Time to expiration  $K_i$  Strike Price of  $i$ th out-of-the-money option; a call if  $K_i > F$  and a put if

$K_i < F$

$\Delta K_i$  Interval between strike prices-half the distance between the strike price on either side of  $K_i$

$R$  Risk free rate to expiration

$Q(K_i)$  Mid Point of the bid ask quote for each option contract with strike  $K_i$

$F$  Forward Index taken as the latest available price of NIFTY future contract of corresponding expiry

$K_0$  First strike below the forward index level,  $F$

Some of these are further explained below:

**1) Time to Expiry:** Time to expiry of the options contracts of Nifty that are selected to calculate the index. The time to expiry is computed in minutes instead of days in order to arrive at a level of precision expected by professional traders.

**2) Interest Rate:** The NSE Mibor rate of relevant tenure ( 30 days or 90 days) is being considered as risk-free interest rate for the respective expiry months of the NIFTY option contracts.

**3) The Forward Index Level:** A methodology called the forward index level is being used to select the contracts which will be used to calculate the index. India VIX is computed using out-of-the-money option contracts. Out-of-the-money option contracts are identified using forward index level. The forward index level helps in determining the at-the-money (ATM) strike which in turn helps in selecting the option contracts which shall be used for computing India VIX. The forward index level is taken as the latest available price of NIFTY future contract for the respective expiry month.

**4) Bid-Ask Quotes:** The strike price of NIFTY option contract available just below the forward index level is taken as the ATM strike. NIFTY option Call contracts with strike price above the ATM strike and NIFTY option Put contracts with strike price below the ATM strike are identified as out-of-the-money options and best bid and ask quotes of such option contracts are used for computation of India VIX. In respect of strikes for which appropriate quotes are not available, values are arrived through interpolation using a statistical method namely “Natural Cubic Spline”. After identification of the quotes, the variance (volatility squared) is computed separately for near and mid month expiry.

**5) Weightage:** The variance is computed by providing weightages to each of the NIFTY option contracts identified for the computation, as per the CBOE method. The weightage of a single options contract is

directly proportional to the average of best bid-ask spread of that option contract and inversely proportional to the option contract's strike price.

Finally, the variance for the near and mid month expiry computed separately are interpolated to get a single variance value with a constant maturity of 30 days to expiration. The square root of the computed variance value is multiplied by 100 to arrive at the India VIX value. In a nutshell, from usage point of view, higher the vix index value, higher the volatility.

## RESEARCH METHODOLOGY

This research is based on primary data as well as secondary data collection.

One of the most important users of research methodology is that it helps in identifying the problem, collecting, analyzing the required information data and providing an alternative solution to the problem.

The secondary data was collected through the historical data available on NSE website of both Nifty and India VIX. Statistical analysis is done through correlation and tried to find out the relation between the daily changes of India VIX and Nifty.

### Correlation

Pearson's product-moment correlation coefficient (r) is a common measure of the correlation between two variables X and Y. it ranges from +1 to -1. A correlation of +1 means that there is a perfect positive linear relationship between two variables. A correlation of -1 means that there is a perfect negative linear relationship between two variables.

$$r = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}}$$

Where:

N	=	number of pairs of scores
$\sum xy$	=	sum of the products of paired scores
$\sum x$	=	sum of x scores
$\sum y$	=	sum of y scores
$\sum x^2$	=	sum of squared x scores
$\sum y^2$	=	sum of squared y scores

After putting Both the variable X (S&P CNX Nifty) and Y(India VIX) in the formula we find

**Linear Coefficient of correlation (R) = .5605**

A correlation greater than 0.8 is termed to be very strong where as correlation less than 0.5 is termed as very weak, and correlation between 0.5 and 0.8 is termed as good.

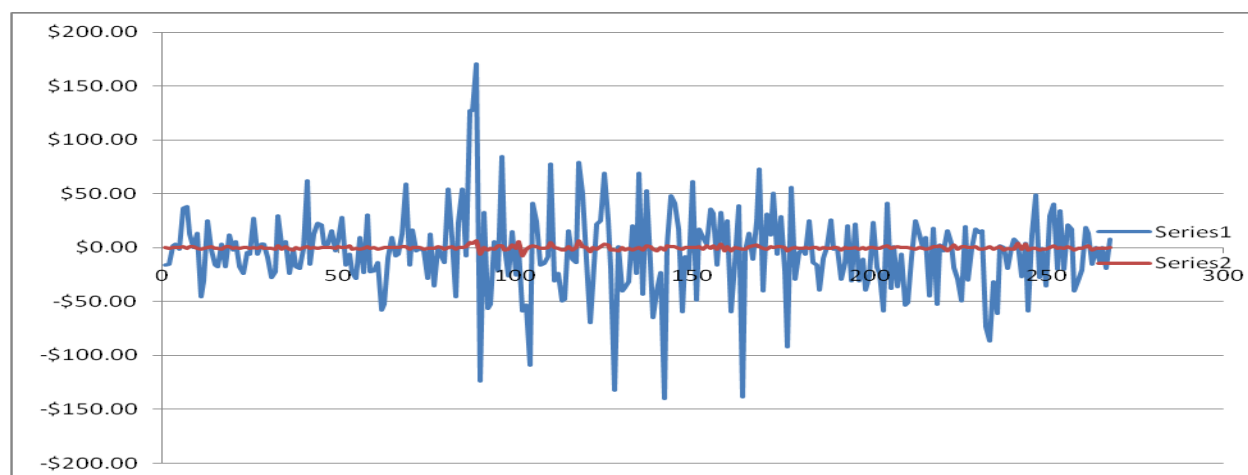
While Linear coefficient of correlation (r) of variables is lying between the category of 0.5 to 0.8 so it can be said that correlation between them proves to be good.

India Vix and Nifty values of change and % change is given below of selected dated

Date	S&P CNX NIFTY		India VIX	
	change	% change	change	% change
4-Apr-11	-15.95	-0.27	-0.05	-0.25
15-Apr-11	12.75	0.22	12.75	5.78
29-Apr-11	2.95	0.05	-1.34	-6.41
16-May-11	3.05	0.06	0.83	4.02
30-May-11	-17.65	-0.32	0.62	3.59
15-Jun-11	6.05	0.11	0.63	3.4
30-Jun-11	-14.05	-0.25	-1.05	-5.4
15-Jul-11	-3.15	-0.06	-0.02	-0.1
29-Jul-11	8.75	0.16	1.26	6.81
16-Aug-11	-52.8	-1.04	-0.56	-2.07
30-Aug-11	-53.65	-1.09	-1.19	-4.56
15-Sep-11	-49.8	-0.99	-1.66	-5.12
30-Sep-11	25.3	0.50	0.87	2.8
14-Oct-11	20.5	0.40	-2.26	-8
31-Oct-11	1.8	0.03	1.77	8.47
15-Nov-11	17.15	0.33	0.68	2.69
30-Nov-11	38.95	0.81	-0.32	-1.19
15-Dec-11	50.45	1.06	0.02	0.07
30-Dec-11	-13.7	-0.29	0.49	1.84
16-Jan-12	22	0.45	0.59	2.51
31-Jan-12	-37.95	-0.75	-0.8	-3.41
15-Feb-12	-44.55	-0.82	-0.61	-2.69
29-Feb-12	-49.45	-0.92	1.08	4.18
15-Mar-12	1.4	0.03	0.7	2.83
30-Mar-12	-27.75	-0.54	-1.95	-8.01
16-Apr-12	16.85	0.32	-0.52	-2.29
30-Apr-12	7.55	0.14	0.21	1.19

Source: [www.nseindia.com](http://www.nseindia.com)

**Graph Representing Correlation between S&P CNX Nifty and Indian Volatility Index from 1April 2011 to 30 April 2012**





## Series 1 S&P CNX NIFTY

## Series 2 India VIX

### INDIA VIX AS AN EFFECTIVE HEDGING TOOL

From the above graph we can state that if the India VIX is raising than at the same time S&P CNX NIFTY also rises which shows the positive relationship between both the variables. This presents immense potential to use the volatility asset class as offered by the VIX as an effective hedging instrument. VIX options are an excellent tool for traders who want to take a position on expected implied volatility. The features of volatility trading are that they are non directional in nature, and that the view taken by a trader through India Vix is that of whether the underlying asset will be more volatile in the future or not. The traditional way to implement such a view without incurring directional risks would be to use non-vanilla options like straddles, strangles or through variance swaps. However, with the introduction of VIX derivatives, such views can be simply implemented, with the advantage of having a standardized implied volatility calculation.

### CONCLUSION

India VIX is a volatility index based on the index option prices of NIFTY. India VIX indicates the investor's perception of the market's volatility in the near term. The index depicts the expected market volatility over the next 30 calendar days. i.e. higher the India VIX values, higher the expected volatility and vice-versa. As from the above we can infer that it shows the relationship between the variables which can be proved as a boon to the investors because it forecast the movement of the index before a month which helps the investors to know the future trends of the market. Investors could hedge their portfolios against volatility with an offsetting position in India VIX futures or options contracts. The implied volatility information that the index gives can also be used in identifying mispriced options.

Taking an India VIX into the account will definitely improve the conditions of investing in market and investor will help to exploit or panic in the situations. India Vix is proved to be very good tool for investor and many more tools are in the pipeline to come for the investor.

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## WOMEN ENTREPRENEURSHIP DEVELOPMENT AS CORPORATE SOCIAL RESPONSIBILITY INITIATIVE – THE CASE OF CORPORATES

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### ABSTRACT

*Starting from the times of barter system to today's modern era of plastic money, the mankind has trodden a remarkably long path. Undoubtedly "profitability" has always been the driving force and an undercurrent behind all this development; but as every coin has two facets; growing cut throat competition and business rivalries started taking heavy toll on the quality, transparency, environment and the society in general endangering the peaceful coexistence of business and society. The businesses houses started realizing that they would have to rise over and above the profitability and take care of all those associated with their survival in the society directly or indirectly. This realization resulted into the concept of Corporate Social Responsibility (CSR). Hence the organizations now-a-days are presuming Corporate Social Responsibility as a key for the Organizational success. In the past few decades companies have decided voluntarily to bestow to a better society and a hygienic environment.*

*Even though large amount of literature is available on Women Entrepreneurship, still there is a need for more research on female entrepreneurship - particularly on intervention of successful corporate paramount which are initiating many programs aiming at promotion of entrepreneurship and empowerment of women in the process. In this back drop an attempt has been made to review the literature on Corporate Social Responsibility, Women Entrepreneurship thus bringing the conceptual insights of Corporate Social Responsibility and Women entrepreneurship.*

*Apart from developing an understanding about the Corporate Social Responsibility (CSR), and bringing out the theoretical insights of CSR, the present paper provides an excellent platform to study few Corporate Social Responsibility (CSR) initiatives for the Women Entrepreneurship Development executed by Corporates like HUL, Aditya Birla Group, Essar group and Bajaj Group.*

*Key words: Corporate Social Responsibility, Women Entrepreneurship Development, HUL, Aditya Birla Group, Essar Group, Bajaj Group.*

### INTRODUCTION

**“No companies can survive without profit, companies must earn profit but with social concern”**

Starting from the times of barter system to today's modern era of plastic money, the mankind has trodden a remarkably long path. Undoubtedly "profitability" has always been the driving force and an undercurrent behind all this development; but as every coin has two facets; growing cut throat competition and business rivalries started taking heavy toll on the quality, transparency, environment and the society in general endangering the peaceful coexistence of business and society. The businesses houses started realizing that they would have to rise over and above the profitability and take care of all those associated with their survival in the society directly or indirectly. This realization resulted into the concept of Corporate Social Responsibility (CSR). Hence the organizations now-a-days are presuming Corporate Social Responsibility as a key for the Organizational success. In the past few decades companies have decided voluntarily to bestow to a better society and a hygienic environment.

Development of women Entrepreneurship can categorically reinforces the economies in most developing countries. Women have been consigned an exclusive role not only because they are more discriminated against gender in the process of developing as an entrepreneur, but also because they are seen as a significant driver of entrepreneurship in light of their unique role in the family and the rise in female-headed households across the developing world. Most of these women enterprises remain in the informal

sector because they lack the ability to grow beyond the neighborhood and comply with the demands of the complex business environment in the formal sector. They may need more than the finance to succeed. Hence there is a need for corporate giants to take initiatives for promoting Women Entrepreneurship. In order to establish corporate stability the intervention of business legends in developing women entrepreneurship has become very much essential. These corporate leaders can create a network of partners in the public and the private sector and actively assist women entrepreneurs in improving their product or service and lend a hand to them in the effective marketing. This ultimately leads to create a healthy business environment.

Generally growing interest in female entrepreneurship in developing countries, which, in turn, is due to greater interest in the role played by entrepreneurship in the economic development process. In modern corporate women still own and manage significantly fewer businesses than men. Many researches focused on the behavior of female entrepreneurs in terms of traits, motivations, and success rates and their gender-related distinctiveness etc. Even though large amount of literature is available on Women Entrepreneurship, still there is a need for more research on female entrepreneurship—particularly on intervention of successful corporate paramount's of developing countries which are initiating many programs aiming at promotion of entrepreneurship and empowerment of women in the process.

### OBJECTIVES OF THE STUDY

In bringing the conceptual insights of Corporate Social Responsibility and Women entrepreneurship, the study is carried out with the following specific objectives:

- ❖ To review the literature on corporate social responsibility and women Entrepreneurship.
- ❖ To understand the emerging trends in corporate social responsibility
- ❖ To examine the CSR initiatives of organizations that aim at development of women entrepreneurship with reference to various case studies.

### RESEARCH METHODOLOGY

For preparing the paper, firstly, analysis was made about targeted areas of CSR. Secondly, case studies of HUL, Aditya Birla Group, Essar group and Bajaj Group Companies are being studied in which their CSR initiatives aimed at development of women entrepreneurship, has been taken into consideration. Data for the research purpose has been collected from various websites, magazines, journals and annual reports of the companies.

### CORPORATE SOCIAL RESPONSIBILITY

**Corporate social responsibility (CSR, also called corporate conscience, corporate citizenship, social performance, or sustainable responsible business/ Responsible Business (Wood, 1991))** is a form of corporate self-regulation integrated into a business model.

The idea of CSR first came up in 1953 when it became an academic topic in HR Bowen's "Social Responsibilities of the Business". Since then, there has been continuous debate on the concept and its implementation. Although the idea has been around for more than half a century, there is still no clear consensus over its definition.

One of the most contemporary definitions is from the World Bank Group, stating, "*Corporate social responsibility is the commitment of businesses to contribute to sustainable economic development by working with employees, their families, the local community and society at large, to improve their lives in ways that are good for business and for development.*"

Corporate Social Responsibility (CSR) defined as "the ethical behavior of a company towards the society," manifests itself in the form of such noble programs initiated by for-profit organizations (Meenu et.al, 2012).

The mutual dependence of corporations and society implies that both business decisions and social policies must follow the principle of shared value. That is, choices must benefit both sides. If either a business or a society pursues policies that benefit its interests at the expense of the other, it will find itself on a dangerous path. A temporary gain to one will undermine the long-term prosperity of both” (**Porter and Kramer, 2006**)

CSR has become increasingly prominent in the Indian corporate scenario because organizations have realized that besides growing their businesses it is also vital to build trustworthy and sustainable relationships with the community at large. This is one of the key drivers of CSR programs so latest obsession is corporate social responsibility .This is the new age of corporate social responsibility. A company wants to be rated as much by its contribution to society as by its improvement in the bottom line.

### **TRIPLE BOTTOM LINE**

**People planet profit**, also known as the triple bottom line, are words that should be used and practiced in every move an organization makes. People relates to fair and beneficial business practices toward labour, the community and region where corporation conducts its business. Planet refers to sustainable environmental practices. A triple bottom line company does not produce harmful or destructive products such as weapons, toxic chemicals or batteries containing dangerous heavy metals for example. Profit is the economic value created by the organization after deducting the cost of all inputs, including the cost of the capital tied up. It therefore differs from traditional accounting definitions of profit.[(**Gopal et.al 2010, Idea: Triple bottom line, 2013**)]

It is the commitment by corporate sector to contribute to socio-economic development of the workforce and their families as well as of the local community and society at large through investment or sharing of resources at its disposal. The participation of corporate sector is necessary, as the development cannot be the sole responsibility of the government, especially in a vast country like India. The scale and nature of the benefits of CSR for an organization can vary depending on the nature of the enterprise, and are difficult to quantify. However, businesses may not be looking at short-run financial returns when developing their CSR strategy. In India, CSR practices are being undertaken by big industrial houses which are recognized and some small businesses also take up social responsibilities in organised as well unorganized manner.

There may be a realistic approach and some organizations may have things to show off but far from realities. Similarly, some of the social sectors may get due significance in CSR initiatives and some may remain neglected. Each company was in competition with the other to earn more profit. Yes, governance, rules and accountability were important. Even corporate social responsibility as a concept was not alien. But for most companies, this was not an issue that dominated the top management's mind space.

Today, business seems to be worried about trust, values and social responsibility. Top CEOs of the world's best companies debated how companies should not just remain content with following rules of business. They need to follow principles. So, rules are important for the corporations of tomorrow, but more important is principled behaviour. Similarly, accountability was considered very important. But most business leaders today feel that companies must move from accountability to transparency. It is argued that a company's financial performance should not be the sole criterion of its success. Shareholders are important. But more important are other stake holders -- its customers, the employees and the communities in which they operate.

Indian entrepreneurs and business enterprises have a long tradition of working within the values that have defined our nation's character for millennia. India's ancient wisdom, which is still relevant today, inspires people to work for the larger objective of the well-being of all stakeholders. These sound and all-encompassing values are even more relevant in current times, as organizations grapple with the challenges of modern-day enterprise, the aspirations of stakeholders and of citizens eager to be active participants in economic growth and development (**Ministry of Corporate Affairs, 2009**).

## PROVISION FOR CSR IN COMPANIES BILL 2012

Till date it is very difficult exercise to analyze the spending of CSR by various firms and private companies and such information is not maintained at government level, even among the top 100 firms by revenue, there are many who don't report their CSR spends or even declare the social causes they support, that is because they are not required to do so by law and no provisions for CSR exists in the Companies Act, 1956 so currently the Ministry does not maintain such details. But all that will change when the new Companies Bill, 2012 (which has already been passed by the Lok Sabha) becomes a law (**CSR Report Card, 2013**)

**The Companies Bill, 2012** incorporates a provision of CSR under Clause 135 which states that every company having net worth Rs. 500 crore or more, or a turnover of Rs. 1000 crore or more or a net profit of rupees five crore or more during any financial year, shall constitute a CSR Committee of the Board consisting of three or more Directors, including at least one Independent Director, to recommend activities for discharging corporate social responsibilities in such a manner that the company would spend at least **2 percent** of its average net profits of the previous three years on specified CSR activities.

According to Schedule-VII of Companies Bill, 2012 the following activities can be included by companies in their CSR Policies:-

- (i) Eradicating extreme hunger and poverty;
- (ii) Promotion of education;
- (iii) Promoting gender equality and empowering women;
- (iv) Reducing child mortality and improving maternal health;
- (v) Combating human immunodeficiency virus, acquired immune deficiency syndrome, malaria and other diseases;
- (vi) Ensuring environmental sustainability;
- (vii) Employment enhancing vocational skills;
- (viii) Social business projects;
- (ix) Contribution to the Prime Minister's National Relief Fund or any other fund set by the Central Government or the State Governments for socio-economic development and relief and funds for the welfare of the Scheduled Caste, the Scheduled Tribes, other backward classes, minorities and women; and
- (x) Such other matters as may be prescribed.

## BENEFITS OF CSR

As many corporations and MNCS are resorting to CSR undeniably it must be contributing to the economic objective of the firm either directly or indirectly. The following are the major benefits from CSR Initiatives of the organization.

- ✓ Augmented employee loyalty
- ✓ Enhanced customer loyalty
- ✓ Less unstable stock value
- ✓ Superior brand value
- ✓ Less litigation and environmental costs
- ✓ Optimistic public relations
- ✓ Cultured approach towards addressing social and political issues



### **CSR-AS ORGANIZATIONAL INNOVATION**

In pursuit of CSR initiatives, some companies have invented innovative products and services. Such innovations reaped immeasurable benefits to the company. The history showed that many inventions and discoveries have been accidental. Thus in search of CSR activities many organizations enjoyed the fruits of innovations.

### **WOMEN ENTREPRENEURSHIP**

Women entrepreneurs have been designated as the new engines for growth and the rising stars of the economies in developing countries to bring prosperity and welfare. A variety of stakeholders has pointed at them as an important ‘untapped source’ of economic growth and development (**Minniti and Naude, 2010**). The World Economic Forum identified women entrepreneurs as “the way forward” at their annual meeting in 2012 (**WEF, 2012**). Others speak of women entrepreneurs as if they are the ‘New Women’s Movement’. They state: “forget aid; focus on foreign investment in women entrepreneurs as key drivers for growth and development”.

The growth of the proportion of women entrepreneurs in developing countries has drawn the attention of both the academic and the development sector. Donors, international public institutions, national and local governments, NGOs, private companies, charities, knowledge institutes and business associations have initiated programs or policies to promote and develop women’s entrepreneurship. They initiate programs for capacity-building of entrepreneurial skills, strengthening women’s networks, provide finance and trainings, or design policies that enable more and stronger start-ups and business growth. They all claim that women entrepreneurship is essential for growth and development. Some even argue that women entrepreneurs’ contribution tends to be higher than that resulting from entrepreneurial activity of men (**Minniti, 2010**).

In recent years, the general attention to women and entrepreneurship in developing countries has increased to a great extent and the focus on this ‘untapped source’ of growth seems to be indispensable nowadays for development practitioners and policy makers. However, despite this growing number of initiatives and resources made available to promote and develop women’s entrepreneurship in developing countries, women still own and manage fewer businesses than men, they earn less money with their businesses that grow slower, are more likely to fail and women tend to be more necessity entrepreneurs.

### **WOMEN ENTREPRENEURSHIP DEVELOPMENT IN GLOBAL CONTEXT**

As compared to men, there are a slight lower number of women worldwide engaged in entrepreneurial activity. An important resource of data is the Global Entrepreneurship Monitor project, which estimates that more than 187 million women are engaged in entrepreneurial activity (**GEM, 2012**). On a global scale, the gender gap does not seem to be that alarming. GEM data (2012) demonstrates that men make up 52% of all entrepreneurial activity, compared to 48% of women entrepreneurs. In fact, some data suggest that women have outpaced men in the rate of new business they form. However, when studied more closely at country level, the gender gap varies greatly in size across the world. It ranges from 1.5% to 45.4% women of the adult population who actively operate a business as entrepreneurs or who are thinking about starting a business. In Panama, Venezuela, Jamaica, Guatemala, Brazil, Thailand, Switzerland and Singapore the rates of men and women engaged in starting a business are equal (**GEM, 2012**). The only economy with currently more female than male entrepreneurs is Ghana where 55 % of entrepreneurial activity is conducted by women (**GEM, 2010**).

### **WOMEN ENTREPRENEURSHIP DEVELOPMENT IN INDIA**

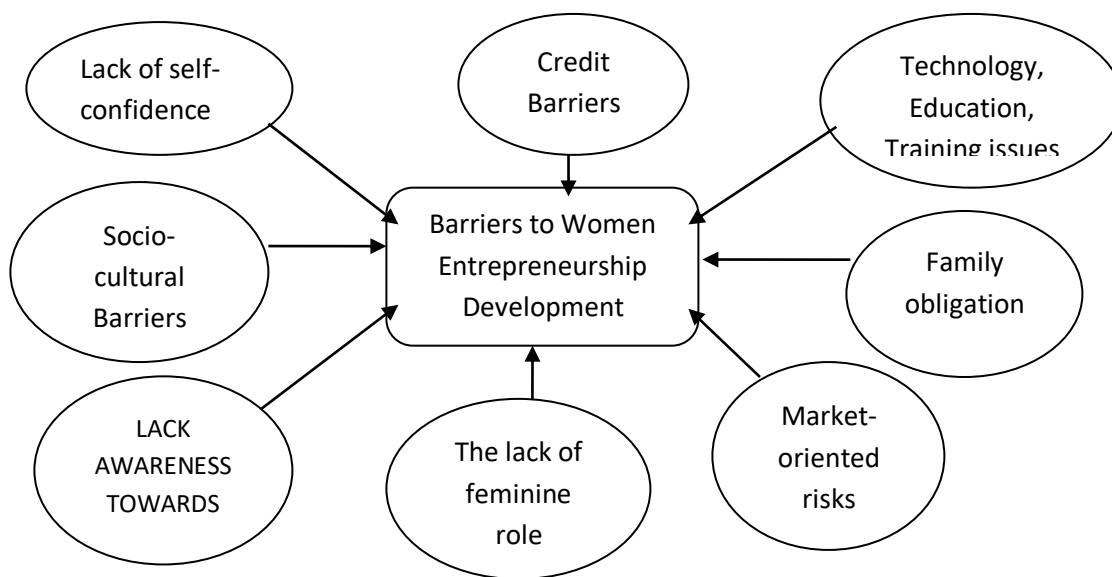
In developing countries like India, business organizations constantly strive for the creation of economic, social and environmental value. Such efforts can be appreciated further if organizations attempt to solve the problems faced by the Female entrepreneurs and promote Women Entrepreneurship. Success of Women entrepreneurs undermined due to the large by the discrimination experienced by women while

availing venture capital and also due to segregation of them from financial system. In the 1990's women business owners in fact continued to face considerable gender-related barriers including limited access to capital, difficulty in competing for government contracts, and lack of awareness on institutions providing financial assistance. Women's business leadership cannot be understood using traditional (male chauvinistic) framework of business analysis. There is a significant difference in skills, business goals, management styles, business characteristics and growth rates. These variations suggest that women perceive and approach business differently than men (**Brush, 1992**).

### BARRIERS TO WOMEN'S ENTREPRENEURSHIP

Even though there is a significant development of women entrepreneurship in India still we cannot overlook the various barriers in women entrepreneurship development. The following are the major factors that are hindering the growth of women Entrepreneurship (see figure).

**FIGURE**  
**BARRIERS TO WOMEN ENTREPRENEURSHIP DEVELOPMENT**



**SOCIO-CULTURAL BARRIERS:** The greatest limitation to women entrepreneurs is that they are in a male dominant society. It is observed most of the members in the society feel that setting up of a business enterprise and managing it is the function of male community and women's responsibility is to manage family.

**LACK OF SELF-CONFIDENCE:** It is also observed many women emerged as women Entrepreneurs by accident not by their interest. The reason behind is the strong belief that their requirement is for the family than for doing any other activities. They underestimate their Entrepreneurial competencies, valor, and strengths.

**CREDIT BARRIERS:** The financial institutions are skeptical about the entrepreneurial abilities of women. The bankers consider women loonies as higher risk than men loonies. The bankers put unrealistic and unreasonable securities to get loan to women entrepreneurs. The financial institutions discourage women entrepreneurs on the belief that they can at any time leave their business and become housewives again. The result is that they are forced to rely on their own savings, and loan from relatives and family friends. Most noteworthy impediment reported by women entrepreneurs is the discrimination experienced by them in seeking venture capital and exclusion from business networks (**Hisrich and Brush, 1987**). In 1990's women continued to experience gender discrimination including limited access to capital, difficulty in competing with government contracts and lack of information about where to get assistance.



**TECHNOLOGY, EDUCATION, TRAINING ISSUES:** Many women Entrepreneurs are not professionally trained. The entrepreneurial training programs will provide the Knowledge, skills and motivation to encourage entrepreneurial success in various situations. Moreover many women entrepreneurs are unaware of such training programs.

**WOMEN'S FAMILY OBLIGATIONS:** Women are more inclined towards family obligations and they give first preference towards their family obligations rather than business obligations. This is one among the factors which prevent them from becoming successful entrepreneurs in both developed and developing nations.

**MARKET-ORIENTED RISKS:** Though many women Entrepreneurs succeed in manufacturing the products or services but they utterly fail in marketing their products. They have to depend on office staffs and intermediaries, to get things done, especially, the marketing and sales side of business. Even when they are otherwise in control of an enterprise, they often depend on males of the family in this area.

**THE LACK OF FEMININE ROLE MODELS IN ENTREPRENEURSHIP:** In India Very few successful Women Entrepreneurs are identified who can give inspiration to the prospective Women Entrepreneurs. Even today in India very few women are identified who have accomplished an incredible success in their Business Enterprises.

**LACK AWARENESS TOWARDS EAPs:** Many women Entrepreneurs are not aware of the Entrepreneurial Assistance programs which are offered by the Government, Institutions, and Nongovernmental Organizations.

#### **WOMEN ENTREPRENEURSHIP DEVELOPMENT AS CSR INITIATIVE**

The following are the corporate companies which aimed at Women Entrepreneurship Development as a CSR Initiative.

#### **A CASE STUDY OF HUL SHAKTI - CHANGING LIVES IN RURAL INDIA**

Project SHAKTI is HUL's innovative idea to elevate the standard of living in rural India by empowering women in rural areas. Initiative of HUL program could develop income-generating capabilities for derelict rural women. It has provided such women a small-scale enterprise opportunity. SHAKTI means "Strength". Project SHAKTI is taken up in rural areas. Intention behind this Project is to select women from such areas and is nominated as distributors for HUL products. They are named as "Shakti Ammas". Such identity has ushered the prosperity in their lives and most importantly could help in preserving their self respect. Shakti is HUL's rural initiative, which targets small villages with population of less than 2000 people. The objectives of Project Shakti are to create income-generating capabilities for underprivileged rural women by providing a sustainable micro enterprise opportunity. It has extensively covered over 5000 villages in 52 districts in Andhra Pradesh, Karnataka, Gujarat and Madhya Pradesh.

Initially, the project was created as a response to Unilever's strong desire to tap new markets within India. In pursuit of achieving its dream, Unilever has to face many difficulties such as problems to reach most small villages due to poor transport and supply chain infrastructure, along with challenges of selling products to a population with little or no disposable income, Unilever saw the need to innovate.

Unilever tied up with existing women's self-help groups. Project Shakti enabled women generate income after receiving training and a loan to get off the ground. The company decided to set up a direct-to-consumer retail operation by creating a network of entrepreneurs to sell its products door-to-door and to produce a range of affordable products in small sizes to meet the needs and pockets of low-income consumers.

The impact on the woman as an individual, along with the ripple effect on the family and surrounding community, is probably immeasurable. Though HUL deemed it as its CSR initiative but Contemporary Management theorists described it as "a business initiative with social benefits." No doubt it could set a new trend in philosophy of CSR. HUL sheer interest is to create income-generating opportunities, health

and hygiene education through the Shakti Vani programme, and creating access to relevant information through the community portal i-Shakti.

### **A CASE STUDY OF ADITYA BIRLA GROUP**

Before Corporate Social Responsibility (CSR) found a place in corporate lexicon, it was already textured into Birla Group's value systems. As early as the 1940s, Birla Group's founding father Shri G. D. Birla espoused the trusteeship concept of management. Simply stated, this entails that the wealth that one generates and holds, is to be held as in a trust for our multiple stakeholders. With regard to CSR, this means investing part of our profits beyond business, for the larger good of society.

While carrying forward this philosophy, Mr. Aditya Birla, weaved in the concept of 'sustainable livelihood'. He would say, "Give a hungry man fish for a day, he will eat it and the next day, he would be hungry again. Instead, if you taught him how to fish, he would be able to feed himself and his family for a lifetime." The vision articulated by this Group is: "To actively contribute to the social and economic development of the communities in which we operate, and, in so doing, to build a better, sustainable way of life for the weaker sections of society and raise the human development index of our country."

### **CSR INITIATIVE TAKEN BY BIRLA GROUP - EMPOWERING WOMEN ENTREPRENEURS:**

To address the issue of poverty alleviation effectively, Birla Group have evolved a multipronged strategy. Its planks are education, vocational training, and formation of Self-Help Groups among rural women. At their Vocational Training Institute, they conduct skill oriented certified programmes for both rural and urban youth. They have linked up with **Jan Shikshan Sanstha** to provide vocational training to persons between the ages of 15 and 42 years. Jan Shikshan is the arm of the Human Resource Development Ministry which promotes functional literacy and conducts vocational training in rural and semi-urban areas to generate employment and alleviate poverty. Women are trained in tailoring, the art of applying mehendi, arts and crafts and also in detergent and neel (blue powder) making for use with detergents. Practically all houses, whether in the villages or towns, have a need for these. So the village women are able to eke out a very encouraging subsidiary income and for some of them it also provides a source of subsistence."

### **SHAKUNTALA- WATER FATCHER TO A QUALIFIED HAND PUMP MECHANIC**

The story of Shakuntala, one of the beneficiaries, is both touching and inspirational. Shakuntala lives in the Dudhi Block of Renukoot in Uttar Pradesh. A mother of five children, she, along with other village women, would trudge five kilometres to fetch four pots of water for the family, and even that would barely suffice. Voicing her opinion in timid tones, she would say that women in the villages are children of a lesser God, given the hardships they faced. Our team took this up as a challenge. Backed by Birla Group's resources and UNICEF, they installed hand pumps at intervals of every 10 houses in 110 villages, providing water to over 100,000 people. No longer did women have to spend hours on end collecting water. The UNICEF collaboration mandated that the hand pumps be maintained by women. Shakuntala was the first woman volunteer. Today, she is a qualified hand pump mechanic, earning \$650 in the summer months, when the pumps need to be repaired.

She has, in turn, trained another 80 women as hand-pump mechanics. These women, who cannot read or write, earn a good deal of money by rural standards. Today, Shakuntala very proudly remarks that, from being a seeker of charity, she is now a teacher. She says that the Group has been a life changer not only for her but for all those in the 110 villages who now have easy access to water — their life force. Another 45,000 women across India feel empowered, working in 4,500 self-help groups set up by Birla teams. They are making a living. Like Shakuntala, these women like believe that they are now in charge of their own destiny.

## **A CASE STUDY OF ESSAR FOUNDATION**

The Essar Foundation works within the framework of the 3E model — **Entrepreneurship, Education and Environment** — to adopt a future-focused approach to sustainability. The Foundation's activities, divided across six focus areas —education, livelihoods and entrepreneurship, women's empowerment, health, infrastructure and environment — are based on the principles of good governance and equity.

### **INITIATIVE TAKEN BY ESSAR FOUNDATION**

The Foundation organized a self-help group (SHG) fair at Dabuna in Odisha, which resulted in the formation of and lending guidance to more than 25 SHGs in the region. Similar activities have been undertaken in Chhattisgarh.

Rural India offers limited employment opportunities and extremely low earnings, particularly for rural women who are typically uneducated. The Foundation provides them the necessary skills training, which helps them not only establish SHGs but manage and build on them to increase their earning potential.

It also links enterprising women with microfinance institutions, thus giving women entrepreneurs' crucial financial support that might not be otherwise available to them.

### **CSR INITIATIVE BY BAJAJ GROUP**

Bajaj Group is involved in a variety of welfare activities, which are carried out with the support of its companies and trusts. The social and welfare objectives of the Bajaj Group are being fulfilled through the many Trusts and Foundations it has established. Spending up to Rs. 100 million (US\$ 2.15 million) every year.

### **THE JAMNALAL BAJAJ SEVA TRUST FOR RURAL WOMEN ENTREPRENEURSHIP**

**Jankidevi Bajaj Gram Vikas Sanstha**, a trust, named after the Padma Vibhushan **late Jankidevi Bajaj**, wife of late Shri Jamnalal Bajaj, was established in 1987. The aim of this trust is to work towards improving the quality of life of people in rural areas, eliminating poverty, empowering women, development of human and natural resources, promoting ecological balance, and so on. At present, it is being implemented in 24 remote and backward villages in the cities of Pune and Aurangabad. Among others, one of the objectives of the Jankidevi Bajaj Gram Vikas Sanstha is to empower women and it has been doing so by training women in using improved technology for storage of food grains and initiating goat rearing projects owned and managed by women, emphasising the importance of family planning particularly tubectomy operations and securing loans for women members for both consumption and income generation.

**IMC Ladies' Wing Jankidevi Bajaj Puraskar for Rural Entrepreneurship**, which commemorates the birth centenary of the late Smt. Jankidevi Bajaj, is an award conferred for outstanding contribution of women working for rural development

## **CONCLUSION**

The relationship between business and society is just like 'a ship and sea'. Just as no ship can reach the other side of its destination without cooperation and sanction from the sea, business can also not stay, survive and succeed for a long period without social acceptance and sanction. Hence it can be concluded in saying that the social considerations are the foundation on which the sustainable economic development of the country rests and in which corporate social responsibility has a major role to play.

At last it can be concluded that the initiatives and amount spend by HUL, Aditya Birla Group, Essar group and Bajaj Group on Corporate Social Responsibilities especially for the Women Entrepreneurship Development is commendable and worthwhile. And these types of initiatives and contribution lead to sustainable development of the economy.

**"Jiyo Aur Jine Do" (a Hindi saying) i.e. "Live and Let Others Live".**

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## ACKNOWLEDGEMENT

I, **V.Shugufta Yasmeen**, thank to University Grants Commission (UGC) New Delhi, India, for award of Junior Research Fellowship (UGC-Ref.No.:2783/ (NET-DEC.2010).

## A STUDY ON THE IMPACT OF CERTAIN VARIABLES ON THE WORK-LIFE BALANCE OF WOMEN ACADEMICIANS

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### ABSTRACT

*The objective of this research is to study the impact of age, salary, experience, job security etc on the ability to maintain work- life balance among women academicians. The research was conducted among women academicians working in a self financing engineering institution. Work- life balance means striking a balance between personal and professional life. Women academicians are finding it difficult to balance both because of the family related issues and work related issues. Academicians will be able to derive satisfaction only when they know how to manage their emotions. Emotional balancing is yet another important factor to be taken into consideration. The primary data was collected through questionnaire survey done on a sample of 60 female faculty members of a self financing institution in Madurai and analyzed with the help of mean, median, mode, weighted average and correlation analysis. The findings of the study reveal that academicians are unable to balance personal and professional life because they do not have job security and moreover the salary is less.*

*Key words: Job security, Personal life, Professional life, Work-Life Balance*

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### INTRODUCTION

Work-Life Balance is like two sides of a coin. It means prioritizing “work” on the one hand and “life” on the other. Work-Life Balance may seem easy but it’s highly difficult especially for working women academicians. Family related issues and work related issues together may not allow the women academicians to have a balance between the two. Family related issues are plenty in number. It may be from kids, spouse, other family members, environment, neighbors etc. The study is confined to work related issues alone. Eventhough the problems are there in both, working women will feel the burden from working atmosphere much rather than the family side.

Factors that affect the work life balance should be taken into consideration for analysis. The respondents may not have role clarity; they may not be enthusiastic because the job is monotonous. They may not be transparency in getting rewards on promotion cordiality in relationship is another variable. Group cohesiveness in the institution may not be there. Apart from the above, there are some other variables which has to be taken into consideration for the purpose of the study. They are age of the respondents. Since the average age of the respondents ranges from 35-45 years, Work-Life Balance is difficult. Personal commitments like higher education of the child, construction of house, building, and ailing parents at home are some of the common problems that prevail during this age category. Professional commitment on the other side may be career development by pursuing higher education, enriching skills and updating knowledge. Both will get clashed at a point of time and the academicians will not be able to have an equilibrium state.

Engineering institutions are offering technical education. But the salary that they are offering for the academicians for being a mentor is a meager amount. Being fully equipped academician, when not paid as per the AICTE norms, will not be happy. Contended person will work with institutional effectiveness. Unsatisfied academician will have imbalance.



Many technically qualified women academicians are unable to survive in the academicians line for large number of years because they are unable to strike a balance between work and life. Salary may be one constraint. Women are on the lookout for some other jobs in the corporate.

In self financing engineering institution, job security is not provided. This is yet another reason for the academicians to have imbalance. Always they are in search of some other jobs because whenever termination takes place, they can easily a switchover. In many institutions turnover also takes place quite often.

Academicians feel that the management squeezes the work from them and in return they do not provide sponsorship arrangements for pursuing higher education. Academicians feel that in their leisure time they are vested with clerical work and they are not given opportunity to improve their skills and creativity.

Therefore for the purpose of the study, the above were taken as the variables and analysis are made. But on the part of the academicians, they have to take steps to survive because they are surviving in a competitive environment.

## **REVIEW OF LITERATURE**

Hofstede and Jan,(2005) in their study reveal that women are supposed to be more concerned with taking care of the home, and children. Male achievement reinforces masculine assertiveness and competition; female care reinforces feminine nurturance and a concern for relationships and for the living environment. The female teachers need to care for their family as well as for the school-which is not mandatory for males in a masculine society.Sometimes; the male teachers underestimate their female colleagues. These female teachers' expectations are more emotional. When expectations are not fulfilled they grow dissatisfied. A male head teacher can hardly read the emotions of a female teacher. He cannot also overcome his masculine attitudes. Both these together cause dissatisfaction with the supervision of the head teacher.

## **OBJECTIVES**

1. To analyze the impact of age on Work-Life Balance
2. To analyze whether salary has an impact on Work-Life Balance
3. To identify the experience of the respondents and its impact on Work-Life Balance
4. To analyze the perception of the respondents on job security.
5. To find out the impact of material status for providing sponsorship arrangements to pursue higher education

## **HYPOTHESES:**

Null hypotheses were framed and tested for significance to prove the objectives in a systematic manner. The null hypotheses were as follows:

Ho1 (Null) : There is no significant relation between age of the respondents and Work-Life Balance.

Ho2 (Null): There is no significant relation between salary of the respondents and Work-Life Balance

Ho3 (Null): There is no significant relation between years of experience and Work-Life Balance

Ho4 (Null): There is no significant relation between job security and Work-Life Balance

Ho5 (Null): There is no significant relation between sponsorship arrangements for higher studies and Work-Life Balance

## RESEARCH DESIGN:

This research has been categorized to be Descriptive because the major purpose of this research is the description of the relation between the factors and Work-Life Balance as it exists.

## SAMPLE DESIGN:

Universe Type: Finite

Sampling Method: Convenience

Sampling Unit: Ultra college of Engineering and Technology, Madurai.

Secondary data was collected from Internet, books, newspapers, journals, business magazines etc. For primary data collection, a five-point scale questionnaire containing 16 statements was used. The scale was Likert's five-point scale where the respondents had to fill one choice ranging from "Highly Satisfied" to "Totally Dissatisfied". The questionnaires were filled by 60 respondents. After collecting the data, it was tabulated by using Mean, Median, Mode and Correlation analysis.

## SAMPLE

The questionnaire was distributed to 80 academicians working in a Private Engineering college in Madurai city, out of which 70 came back and finally 60 were taken for the analysis.

## FORMULA APPLIED

This study uses the Mean, Median, Mode and Correlation Analysis to test the hypotheses. The formula used to calculate is given by

$$\text{Mean} = \frac{\sum fx}{\sum f}$$

$$\text{Median} = 1 + \frac{\frac{N}{2} - m}{f} \times c$$

Where '1' is the Lower Limit

'N' is the

'm' is the cumulative frequency of the preceding Median class

'f' is the frequency

'c' is the class interval

$$\text{3. Mode} = 1 + \left[ \frac{f - f_1}{2f - f_1 - f_2} \right] \times c$$

Where '1' is the lower limit of the modal class

'f' is the frequency of the modal class



‘f<sub>1</sub>’ is the frequency of the class just preceeding the modal class

‘f<sub>2</sub>’ is the frequency of the class succeeding the modal class

‘c’ is the class width of the modal class

$$4. \text{ WEIGHT AVERAGE} = \frac{\sum (wx)}{\sum (x)}$$

Where  $\sum (wx)$  is the Number of Respondents

$\sum (x)$  is the Weighted Average

## 5. CORRELATION

$$r = \frac{\sum (dx \, dy)}{\sqrt{(\sum dx^2) (\sum dy^2)}}$$

Where  $dx = X - \bar{X}$

$$\bar{x} = \frac{\sum x}{w}$$

$$\bar{y} = \frac{\sum y}{N}$$

$dy = Y - \bar{Y}$

## FINDINGS AND ANALYSIS

A survey was conducted with a sample of 60 samples of Academicians working in Self Financing Academic institutions in Madurai. The responses were tabulated and used to test the five Hypotheses of the Research.

The first hypothesis of the research was as follows

Ho1 (Null): There is no significant relation between age of the respondents and Work-Life Balance.

Alternate: There is significant relation between age of the respondents and Work-Life Balance

This hypothesis was tested on the basis of the responses of 60 academicians using the Mean method.

Age	x	f	fx
25-35	30	6	180
35-45	40	32	1280
45-55	50	11	550
55-65	60	8	480
65-75	70	3	210
Total		60	2700

$$\text{Mean} = \frac{\sum fx}{\sum f}$$

$$\frac{2700}{60} = 45$$

The average age of the academicians in engineering colleges is 45. Those who are in that age will not be able to balance work and life as they have so many commitments both professionally and personally.

The second hypothesis of the research was as follows

Ho2 (Null): There is no significant relation between salary of the respondents and Work-Life Balance.

Alternate: There is significant relation between salary of the respondents and Work-Life Balance

This hypothesis was tested on the basis of the responses of 60 academicians using the Median method.

Salary	f	cf
Rs 10000-15000	25	25
Rs 15000-20000	17	42
<b>Rs 20000-25000</b>	<b>7</b>	<b>49</b>
Rs 25000-30000	6	55
Rs 30000-35000	5	60

$$\text{Median} = l + \frac{\frac{N}{2} - m}{f} \times c$$

C – Class interval, l – Lower Limit

N = 60

$$20,000 + \frac{60 - 42}{2} \times 5000$$

$$20,000 + \frac{30 - 42}{17} \times 5000$$

$$20,000 + \left[ \frac{-12}{17} \right] \times 5000$$

$$20,000 - 8571 = \text{Rs } 11,428$$

When midpoint is taken, the salary which majority of the academicians are getting are Rs.11,428/-It comes between Rs 10000-15000/-Academicians are unable to balance as the salary is very low.

The third hypothesis of the research was as follows

Ho3 (Null): There is no significant relation between years of experience of the respondents and Work-Life Balance.

Alternate: There is significant relation between years of experience of the respondents and Work-Life Balance.

This hypothesis was tested on the basis of the responses of 60 academicians using the Mode method.

$$l + \left[ \frac{f - f_1}{2f - f_1 - f_2} \right] \times c$$

Where 'l' is the lower limit of the modal class

'f' is the frequency of the modal class

'f<sub>1</sub>' is the frequency of the class just preceeding the modal class

'f<sub>2</sub>' is the frequency of the class succeeding the modal class

'c' is the class width of the modal class

Years of Experience	f
0-5	50
5-10	4
10-15	3
15-20	2
20-25	1

$$0 + \frac{50 - 0}{2 \times 50 - 4} \times 5$$

$$= 0 + \frac{50}{96} \times 5$$

$$= 0 + 0.520 \times 5 = 2.604$$

i.e. 2.6

Majority of the respondents are having experience ranging from 0 to 5 Years as 2 Years and 6 Months. Sustaining is impossible because of work-life imbalance.

The fourth hypothesis of the research was as follows

Ho4 (Null): There is no significant relation between job security of the respondents and Work-Life Balance.

Alternate: There is significant relation between job security of the respondents and Work-Life Balance.

This hypothesis was tested on the basis of the responses of 60 academicians using the Weighted Average method.

Particulars	No.of Respondents	%	Weight(w)	Weighted Average(wx)
Highly Satisfied	4	8	5	20
Satisfied	5	10	4	20
Indifferent	4	8	3	12
Dissatisfied	26	52	2	52
Totally Dissatisfied	21	42	1	21
Total	60	120	15	125

$$N=60, \text{Weighted Average} = \frac{\sum(wx)}{\sum(x)}$$

$$= \frac{125}{60}$$

$$= 2.08$$

Weighted Average=2.08.

Approximate value is 2. It is implied that majority of the respondents are dissatisfied with the job security in the institution.

The fifth hypothesis of the research was as follows

Ho5 (Null): There is no significant relation between Sponsorship arrangements for higher studies of the respondents and Work-Life Balance.

Alternate: There is significant relation between Sponsorship arrangements for higher studies of the respondents and Work-Life Balance.

This hypothesis was tested on the basis of the responses of 60 academicians using the Correlation method.

Variables	Highly Satisfied	Satisfied	Indifferent	Dissatisfied	Totally Dissatisfied	Total
Married	1	9	10	10	10	40
Un-married	0	0	2	3	15	20
Total	1	9	12	13	25	60

$$\bar{X} = \frac{\sum x}{N} = \frac{40}{5} = 8$$

$$\bar{Y} = \frac{\sum Y}{N} = \frac{20}{5} = 4$$

X	dx	dx <sup>2</sup>	Y	dy	dy <sup>2</sup>	dx dy
1	-7	49	0	-4	16	28
9	1	1	0	-4	16	-4
10	2	4	2	-2	4	-4
10	2	4	3	-1	1	-2
10	2	4	15	11	121	22
TOTAL		62			158	40

$$r = \frac{\sum (dx dy)}{\sqrt{(\sum dx^2) (\sum dy^2)}} = \frac{40}{\sqrt{62 \times 158}} = \frac{40}{\sqrt{9796}} = \frac{40}{98.97} = 0.404 \text{ i.e. } 0.40$$

The variables are positively correlated with the magnitude of  $r = 0.40$ . It is implied that Sponsorship arrangements for higher studies of the respondents are provided based on the marital status.

Hence the results can be summarized as follows,

Variables	Work-Life Balance	Interpretation
Age	45	Average age of the respondents is 45 Years. Respondents falling under this category will be having lots of commitments which make them to have work imbalance.
Salary	11428	Majority of the respondents salary ranges from Rs 10000-15000/-i.e Rs 11428/- from the analysis. Respondents will be worried and they will be in search of new jobs only.
Experience	2	Respondents are finding difficult to survive because they are unable to stike a balance between the two.
Job Security	2	Respondents are dissatisfied with regard to Job Security they have. This is yet another reason for work life imbalance.
Sponsorship Arrangements	0.40	Majority of the respondents are of the opinion that unmarried are totally dissatisfied with Sponsorship Arrangements for persuing higher studies.

## CONCLUSION

Even though there are several factors affecting work- life balance, the researcher considered only five variables: age, salary, experience, job-security, sponsorship arrangements. Therefore in future a detailed

research can be conducted focusing on other different factors which have remained unexplored in the present study. In a broader sense, the study also revealed that faculty work environment is not only related to how they feel in their workplace, but also how they think about their life.

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## CORPORATE BEHAVIOUR REGARDING SOCIAL AND ENVIRONMENTAL RESPONSIBILITY (CSER)

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### ABSTRACT

*CSER is a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis. A large number of companies globally are becoming conscious about their societal and environmental role and have taken initiatives in the area. Basically, the drivers of CSER are the mix of incentives and risks directed at companies to improve standards. In this paper we have started with the need of the corporate social and environmental responsibility followed by the CSR models and factors affecting the corporate social responsibility of a firm. Then a few companies like Reliance Industries Limited, Indian Oil, Acc Limited, ICICI Bank, HDFC Bank, Shell, Tata steels, Mahindra & Mahindra are being studied that how these firms are performing their social and environmental responsibilities. In the last section of this paper, we have discussed the various challenges faced by the Indian companies in performing their social and environmental responsibilities. The paper is helpful to know the sense of CSER among the various big corporate firms.*

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There has been change in the relationship between business and society, and corporate social and environmental responsibility has become an important part of business environment. According to European Union, “CSER is a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis.” Corporate environmental Responsibility is one such niche area of Corporate Behavior and Governance that needs to get aggressively addressed and implemented tactfully in the organizations. At the same time CSR is one such effective tool that synergizes the efforts of corporate and social sector agencies towards sustainable growth and development of societal objectives at large.

While CSR and CER is relevant for business in all societies, it is particularly significant for developing countries, like India, where limited resources for meeting the ever growing aspirations and diversity of a pluralistic society, make the process of sustainable development more challenging. Therefore it is all the more imperative for the Indian companies to be sensitized to CSR in the right perspective in order to facilitate and create an enabling environment for equitable partnership between the civil society and business.

CSR is about how companies manage the business processes to produce an overall positive impact on environment. Corporate social and environmental responsibility (CSER), also known as corporate responsibility, corporate citizenship, responsible business, sustainable responsible business (SRB), or corporate social performance, is a form of corporate self-regulation integrated into a business model. Ideally, CSER policy would function as a built-in, self-regulating mechanism whereby business would monitor and ensure its adherence to law, ethical standards, and international norms. Business would embrace responsibility for the impact of their activities on the environment, consumers, employees, communities, stakeholders and all other members of the public sphere. Furthermore, business would



proactively promote the public interest by encouraging community growth and development, and voluntarily eliminating practices that harm the public sphere, regardless of legality. Essentially, CSER is the deliberate inclusion of public interest into corporate decision-making, and the honoring of a triple bottom line: People, Planet, Profit.

This transparency of business practices means that for many companies, corporate social responsibility, CSER, is no longer a luxury but a requirement. However, the challenge is to create a commonly respected CSER framework, that would allow on detailed assessment of business practices. Basically, the drivers of CSER are the mix of incentives and risks directed at companies to improve standards. These drivers are market-based, usually beginning when a firm anticipates or responds to a risk associated with the social, labor or environmental impact of a specific business practice.

Economic drivers	Social drivers	Political drivers
-company image/reputation	-Pressure from NGO/CSOs	- improved standing with government
-improved risk management	- licence to operate	- legal, regulatory drivers
- competitive advantage	-pressure from local communities	- political pressure
- pressure from business partners	- research	- licence to operate
- pressure from costumers		
- pressure from investors		
- competitiveness		

## 1. CORPORATE SOCIAL AND ENVIRONMENTAL RESPONSIBILITY-WHY?

- Earlier, governments have relied on legislation and regulation to deliver social and environmental aims in the business sector. Shrinking government resources, coupled with a distrust of regulations, has led to the exploration of voluntary and non-regulatory initiatives instead.
- There is a growing demand for corporate disclosure from stakeholders, including customers, suppliers, employees, communities, investors, and activist organizations.
- Now-a-days consumers have become very conscious about their rights. They protest against the supply of inferior and harmful products by forming different groups. This has made it obligatory for the business to protect the interest of the consumers by providing quality products at the most competitive prices. There is evidence that the ethical conduct of companies exerts a growing influence on the purchasing decisions of customers. Growing customer interest has made it mandatory for the companies to work for and with the customer.
- Investors are changing the way they assess companies' performance, and are making decisions based on criteria that include ethical concerns. Each investor wishes to assure itself about the financial soundness and the good social image of company before making any investment decision.
- Employees are increasingly looking beyond paychecks and perquisites, and seeking out employers whose philosophies and operating practices match their own principles. In order to hire and retain skilled employees, companies are being forced to improve working conditions, lest they may be forced to face paucity of skilled manpower.

- As stakeholders are becoming gradually more interested in business affairs, many companies are taking steps to ensure that their partners conduct themselves in a socially responsible manner. Some are introducing codes of conduct for their suppliers, to ensure that other companies' policies or practices do not blot their reputation.
- The activities of business towards the welfare of the society earn goodwill and reputation for the business. The earnings of business also depend upon the public image of its activities. People prefer to buy products of a company that engages itself in various social welfare programmes. Again, good public image also attracts honest and competent employees to work with such employers.
- Besides getting good salary and working in a healthy atmosphere, employees also expect other facilities like proper accommodation, transportation, education and training. The employers should try to fulfill all the expectation of the employees because employee satisfaction is directly related to productivity and it is also required for the long-term prosperity of the organization. For example, if business spends money on training of the employees, it will have more efficient people to work and thus, earn more profit.

## 2. SOCIAL RESPONSIBILITY MODELS

There are many models of Social responsibility. Few important models are:

### A) Carroll's model:

Carroll has proposed a three dimensional conceptual model of corporate performance. A firm has the following four categories of obligations of corporate performance:

Responsibility	Societal expectation	Examples
<b>Economic</b>	Required	Be profitable. Maximize sales, minimize costs, etc.
<b>Legal</b>	Required	Obey laws and regulations.
<b>Ethical</b>	Expected	Do what is right, fair and just.
<b>Discretionary (Philanthropic)</b>	Desired/ Expected	Be a good corporate citizen.

- i) **Economic Responsibility:** It includes
  - ✓ Efficient operation to fulfill monetary need.
  - ✓ Generation of surplus.
  - ✓ Keeping reserve.
  - ✓ Further expansion.
- ii) **Legal Responsibility:** It includes
  - ✓ Fundamental in nature.
  - ✓ Obey law and regulations.
  - ✓ Insure law & order.
- iii) **Ethical Responsibility:** It includes
  - ✓ Do what is right, fair and just.
  - ✓ Make a healthy & competitive environment.

- ✓ Don't use unfair advertisement.
- ✓ Produce quality products on fair prices.

iv) **Discretionary Responsibility: It includes**

- ✓ Contribute in social development.
- ✓ Provide basic facilities to employees.
- ✓ Contribute in development of community.
- ✓ Take initiative in emergencies.

**PYRAMID OF CSR**



**B) Halal's model:** Halal's return on resources model of corporate performance points out that a firm can only attempt to unite the diverse interests of various social groups to form a workable coalition engaged in creating value for distribution among members of the coalition. Beyond a certain level of economic activity the social issues at stake become conflicting.

**C) Ackerman's model:** There are three phases:-

- The first phase is one when top management recognizes the existence of a social problem and acknowledges the company's policy by making it an oral or written statement.
- The second phase is characterized by the company appointing staff specialists to study the problem and provide recommendations.
- The third phase involves the implementation of the social responsibility programmes.

Thus, the concept of social responsibility discourages businessmen from adopting unfair means like black-marketing, hoarding, adulteration, tax evasion and cheating customers etc. to earn profit. Instead, it encourages them to earn profit through judicious management of the business, by providing better working and living conditions to its employees, providing better products, after sales-service, etc. to its customers and simultaneously to control pollution and conserve natural resources.

### 3. CORPORATE SOCIAL RESPONSIBILITY BY VARIOUS INDIAN COMPANIES:

CSR is not new to India; companies like TATA and BIRLA have been imbibing the case for social good in their operations for decades long before CSER become a popular cause. In spite of having such life size successful examples, CSER in India is in a very nascent stage. It is still one of the least understood initiatives in the Indian development sector. It is followed by a handful of public companies as dictated by the very basis of their existence, and by a few private companies, with international shareholding as this is the practice followed by them in their respective foreign country. Thus the situation is far from perfect as the emphasis is not on social good but rather on a policy that needs to be implemented.

- **ACC Limited (Committed to Environment Protection)**

ACC is among the first Indian companies to include commitment to environmental protection as one of its corporate objectives. Long before pollution control norms and regulatory laws came into existence, ACC inducted the use of sophisticated high efficiency pollution control equipment for cement kilns, raw mills, coal mills, power plants and coolers. That was in 1966. Today each ACC factory has high efficiency state-of-the-art pollution control equipment and devices. Each of its manufacturing units has a separate Environment Section manned by a qualified environmental engineer and supporting staff. ACC is the industry leader in the urgent race to reduce CO<sub>2</sub> emissions. its performance is seen by independent sources to be best in class. They have established systems and procedures to manage improvements in the control of greenhouse gas and atmospheric emissions. Apart of this ACC Ltd has taken initiative to meet the requirement of CSR in 2007 by launching of community development programme with the partnership of NGO for those living near Wadi Plant in Karnataka. This was time-bound plan spread over 3 years targets the building of local institutional and human capacities, creation of local enterprise-based livelihoods, healthier habitats with adequate community physical infrastructure, household services and village institution building. They also have Knowledge Development programme, the prestigious Sumant Moolgaokar Technical Institute at Kymore was opened with a new educational curriculum to complement the education provided at ITI's. Similarly the focus of the Regional Training Center in Jamul, Chattisgarh was redirected to offer professional technical courses of relevance to manufacturing sectors such as cement. A state-of-the-art Learning Center, ACC Academy, was opened at our Thane complex.

- **Aptech Limited**

Aptech Limited, a leading education player with a global presence, has played an extensive and sustained role in encouraging and fostering education throughout the country since inception. It has, in association with leading NGOs, provided computers at schools, education to the underprivileged and conducted training and awareness-camps. To propagate education among all sections of the society throughout the country, especially the underprivileged, Aptech fosters tie-ups with leading NGOs throughout the country, including the Barrackpur-based NGO, Udayan, a residential school for children of leprosy patients in Barrackpur, established in 1970.

- **ICICI Bank Ltd**

The Social Initiatives Group (SIG) of ICICI Bank Ltd works with a mission to build the capacities of the poorest of the poor to participate in the larger economy. The group identifies and supports initiatives designed to break the intergenerational cycle of poor health and nutrition, ensure essential early childhood education and schooling as well as access to basic financial services. Thus, by promoting early child health, catalyzing universal elementary education and maximizing access to micro financial services,

ICICI Bank believes that it can build the capacities of India's poor to participate in larger socio-economic processes and thereby spur the overall development of the country.

- **Indian Oil**

Indian Oil Corporation is committed to conduct business with strong environment conscience ensuring sustainable development, safe workplaces and enrichment of quality of life of Employees, Customers and the Community. Accordingly, the Corporation's Endeavour is to:

- Establish and maintain good standards for safety of the people, the processes and the assets.
- Comply with all Rules and Regulations on Safety, Occupational Health and Environmental Protection.
- Plan, design, operate and maintain all facilities, processes and procedures to secure sustained Safety, Health and Environmental Protection.
- Remain trained, equipped and ready for effective and prompt response to accidents and emergencies.
- Remain committed to be a leader in Safety, Occupational Health and Environmental Protection through continuing improvement.
- Make efforts to preserve ecological balance and heritage.

For the improvement of the environment ,

- Scientifically designed green belts have been developed at Indian Oil's Gujarat and Panipat refineries to serve as pollution sinks and to enhance the aesthetic look of the refinery area.
- Extensive tree plantation has been undertaken by Guwahati, Digboi, Mathura, Haldia and Barauni refineries and townships to develop green cover.
- Mathura Refinery has planted about 115,000 trees in the Taj Reserve Forest near Taj Mahal under the 10-Point Initiative of the Ministry of Petroleum & Natural Gas for improvement of environment in the Taj Trapezium.
- Mathura Refinery has developed a sprawling area of 18,000 sq. m. around its polishing ponds into an ecological park. A large number of migratory birds have made the ecological park as their habitat. Experts from the Bombay Natural History Society (BNHS) have identified about 96 varieties of birds in the park. Similar parks have also been developed at Barauni and Gujarat refineries.

The existence of rich flora and fauna in these parks is a clear testimony of the clean and eco-friendly environment in and around the refineries. The other refineries are in the process of developing such ecological parks

At Indian Oil, corporate social responsibility (CSR) has been the cornerstone of success right from inception in the year 1964. The Corporation's objectives in this key performance area are enshrined in its Mission statement: "to help enrich the quality of life of the community and preserve ecological balance and heritage through a strong environment conscience." The Corporation has supported innumerable social and community initiatives in India.

- **Mahindra & Mahindra**

The K. C. Mahindra Education Trust was established in 1953 by late Mr. K. C. Mahindra with an objective to promote education. Its vision is to transform the lives of people in India through education, financial assistance and recognition to them, across age groups and across income strata. The K. C.

Mahindra Education Trust undertakes a number of education initiatives, which make a difference to the lives of deserving students. The Trust has provided more than Rs. 7.5 Crore in the form of grants, scholarships and loans. It promotes education mainly by the way of scholarships. The Nanhi Kali project has over 3,300 children under it.

- **Reliance Industries Limited**

To be the harmony with nature, RIL continues its efforts such as mangroves plantation and maintenance in the coastal areas with the help of international agencies, tree plantation, maintenance of green belts and gardens in and around its manufacturing units, vermi-compost of waste and its use as manure, recycling of treated water in cooling water system and in horticulture activities, etc. Further, RIL is partnering with the Ministry of Environment and Forests, Government of India and Gujarat Ecological Commission to set up the National Centre for Marine Biodiversity (NCMB) . India's first Centre of Excellence for the study of India's coastal biodiversity, at Jamnagar. This is the first such initiative in India where the Government and a private sector stakeholder will be partnering to safeguard the biodiversity of coastal areas.

RIL's continued efforts on reducing environment footprint are aptly reflected in its E&P business, at domestic and also international operations. RIL completed its planned exploration operations with all necessary regulatory approvals and permits in its domestic and international blocks in Australia, Timor Leste, Yemen, Oman, Kurdistan and Columbia. RIL completed its drilling campaign in Timor Leste without any environmental incidents. Reliance Rural Development Trust has undertaken a unique corporate initiative to create infrastructure facilities in rural areas. The projects undertaken in rural areas are construction of roads, anganwadis (kindergarten school), panchayat offices and community halls. These are some basic development priorities of rural areas. In order to give focused attention to the needs of surrounding rural communities, Baroda Manufacturing Division, Gujarat State, initiated a collective action programme by setting up a voluntary society SVADES with the co-operation of all the neighboring industries in Vadodara. SVADES is a collective endeavor that binds industry and rural community together towards socioeconomic development in the rural areas surrounding the industry. SVADES works in 40 villages covering a population of nearly 200,000.

- **Tata Steel Limited**

The Tata Group recognised the need to protect and conserve the world's natural resources long before it became a mantra of modern business. See how Tata companies are recycling and utilising their waste in innovative ways. Tata Steel has laid great emphasis, over the years, on creating a green environment in and around its plants and on utilising the waste generated in the process of manufacturing steel.

One of Tata Tea's most successful CSR efforts has been in its project Aranya that trains and employs disabled youngsters to extract dyes from natural sources. The tea waste produces dyes in a unique shade of green that is used for various dying processes.

- All the packing material scrap is returned to the vendors and items that are to be disposed are disposed in the dumps provided by the Bangalore Corporation. Wherever these facilities are not available, the material is disposed of through shredding under strict supervision.
- The volume of packaging scrap disposed at a particular time is of a minuscule quantity and does not become a pollution concern. Though the plastic re-cycling industry in India is in a nascent stage, Tata Tea ensures the safe disposal of all plastic that is used.



- All the tea waste is sent to the company's instant tea operations for extraction of soluble solids, which are put to use. The used tea waste from the instant tea operations of the company is either converted to vermicompost on the estates or made into briquettes to be used as fuel for the boilers. The process of vermicomposting that the company undertakes ensures a plant-to-soil cycle thereby helping to build essential soil fauna and flora as well as adding to the organic matter content of the soil for improved nutritional efficiency and uptake.
- Clinical waste from the general / referral hospitals is disposed through incineration, disinfection, deep burial and shredding, in keeping with the prescribed manner of the pollution control board. This ensures that the waste does not damage the ecology of the region and is not in any way harmful to the population in the vicinity of the hospitals.

### **The 4 R's: Tata Chemicals**

The growth of Tata Chemicals has always been guided by four principles replace, reduce, reuse and recycle — in the field of energy, water and other natural resources like limestone. As a conscious Corporate Citizen, Tata Steel Ltd is committed to improving the quality of life of its employees and also of the citizens residing in and around the steel works in Jamshedpur and the various out locations scattered in different states in the country as well as abroad. In 1994, the management of Tata Steel Ltd evolved a Corporate Sector Model to prevent STD/HIV/AIDS and constituted a Core Group – AIDS and Nodal Centre – AIDS to focus on this disease and formulate strategies for its control and prevention. They are also benefiting from programmes on vocational training, economic support for education of children, formation of Self Help Group for economic rehabilitation and sustainability. To increase the reach of the programmes Peer leaders are identified in the community and trained. Internal and external experts are invited to conduct training and workshops for capacity building of knowledge and skills of all stakeholders in health and community-based care and support services on a regular basis.

### **• HDFC**

Under environmental CSER initiatives HDFC Life has taken the 'charity begins at home' approach across all the offices; pan India. Some of steps undertaken since 2010 are:

- Internal campaign to save water, power and paper wastages on war footing level
- Setting usage hours of Air conditioners
- Complete prohibition of paper cups
- Printing of papers on both the sides as default setting
- Hibernation of Desktops post 15 minutes of non usage
- Encouraging employees to have environment friendly celebrations and festivities.

As part of offsetting the paper which would be used for printing the 'Policy documents' for the year 2012-13, HDFC Life partnered with the Non Profit; Plant a Tree Today to plant 1500 saplings in Mumbai in August 2012. The saplings have been planted on a third party land and are maintained by them. HDFC Life and PATT regularly monitor the growth of the saplings.

### **4. CHALLENGES FACED BY INDIAN COMPANIES IN FULFILLING THE CORPORATE SOCIAL RESPONSIBILITIES:**

- Lack of coordination among government machinery and companies.
- Non availability of required infrastructure.



- Optimizing available resources by ensuring that efforts are not duplicated and existing services are strengthened and supplemented.
- Monitoring and liaising with implementation partners such as NGOs for the fulfillment of objectives
- Auditing of CSER work.

## **5. CONCLUSION**

While concluding this paper we will just say that We should emphasize on nurturing a strong corporate culture which would promote corporate social and environmental responsibility values and competencies which are required to achieve the synergistic benefits. A coherent CSER strategy, based on integrity, sound values, and a long-term approach, offers clear business benefits to companies and a positive contribution to the well-being of society.

Organizations have long been accountable to a varied group of stakeholders – employees and communities, as well as investors. The nature of these relationships is now changing in ways that significantly affect corporate performance. In part due to the emergence of the Internet and continuing globalization, companies are becoming accountable for labor issues and working conditions in their partners' operations as well as their own.

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## JIT PURCHASING MODEL USING HARRIS FORMULA

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### ABSTRACT

*This paper deals with the purchasing aspect of Just-In-Time (JIT) considering varying setup costs. The various features of the JIT purchasing like frequent deliveries of small shipments, reduction in the inventories are taken into consideration. Here we deal with determination economic order quantity under JIT purchasing having varying setup cost when demand is fixed. Also cost and sensitivity analysis is carried out to show the relevance of the model derived. In both cases it is observed that with increase in optimum number of shipments results in decrease in total cost. Also increase in contract quantity results in significant decrease in total cost. The model is supported by hypothetical problem which proves that JIT models are superior to EOQ models. The perishable product cannot be held for a long time and hence JIT is the best suitable which reduces the amount of inventory and its cost significantly.*

*Keywords: Demand Rate, EOQ, JIT, Inventory, Varying setup cost*

### INTRODUCTION

We consider the simple case of inventory with the previously mentioned cost structure, constant demand rate and permanent stock control. Shortages are not allowed. The stock level is controlled by the following operational characteristic.

Since the delivery time is zero, it is obvious that an order only pays off when inventory reaches zero ( $t = t_1$ ).

When the inventory level is again zero ( $t = t_2$ ), a second order is placed. Because demand rate is constant, the system is stationary and there is no reason to choose other order quantity different from the first one. Since the situation at period  $t_1$  is the same as that in time  $t_2$  the optimal quantity in  $t_1$  must, therefore, also be optimal in  $t_2$ .

The demand rate is pre-determined, that is, independent of our actions. Hence, the area of optimization lies in the lot size. We need to determine the minimum cost order quantity.

### NOTATIONS:

Q: Order quantity or lot size (number of units)

D: Demand rate (number of units)

A: Cost of placing an order (Rs. per order)

N: Number of shipments per contract

P: Aggregate cost per shipment (Rs. per order)

H: Inventory holding cost (Rs. per unit per year)

b: Proportional ordering cost e.g. transportation cost, cost for controlling incoming goods.

H/N: Inventory cost per unit item and unit time.

The objective function "Cost per cycle ( $t_i - t_{i-1}$ )" is not suitable since minimizing these costs.

### PROBLEM FORMULATION:

$$(A+NP) + bQ + \frac{H}{N} \frac{Q}{2} \frac{Q}{D} \rightarrow \min_Q$$

Average inventory \_\_\_\_\_  $\uparrow$   $\uparrow$  \_\_\_\_\_ cycle length  $t_i - t_{i-1}$

Cost function is  $(A + NP + bQ) + \frac{H}{N} \frac{Q^2}{2D}$

leads to the absurd result that is we get optimal lot size  $Q^* = 0$ . A possible objective function is the average unit cost. Let  $\bar{C}$ : Average unit cost. Therefore,

$$\bar{C} = \frac{\left(A + NP + bQ + \frac{HQ^2}{2DN}\right)}{Q} \rightarrow \min_Q \text{ Another possible objective function is the cycle cost per unit time.}$$

Let C: Cost during a cycle per unit time. Therefore,

$$C = \frac{\left(A + NP + bQ + \frac{HQ^2}{2DN}\right)}{(Q/D)} \rightarrow \min_Q \quad (1)$$

Because of the proportionality  $C = D\bar{C}$  and  $D = \text{constant}$ , it is irrelevant whether we use  $\bar{C}$  or  $C$ . Both are convex in  $Q$ . Hence, we obtain the optimal lot size  $Q^*$  by differentiating the objective function  $C$

$$\min_Q C(Q) \Leftrightarrow \frac{dC}{dQ} = 0$$

$$\frac{dC}{dQ} = 0 \Rightarrow -\frac{(A + NP)D}{Q^2} + \frac{H}{2N} = 0$$

$$\Rightarrow Q^* = \sqrt{\frac{2DN(A + NP)}{H}} \quad (2)$$

Equation (2) is called Just-In-Time Purchasing Model with Harris Formula. This is a practical equation as shown by a short sensitivity analysis. The optimal lot size  $Q^*$  increases with an increasing demand rate  $D$  as well as with an increasing fixed ordering cost.

#### Interval between Two Orders:

$$\text{Let } T: \text{Interval between two orders} = \frac{Q^*}{D}$$

From (2) one immediately derives

$$\Rightarrow T^* = \text{Average Range Of Coverage} = \sqrt{\frac{2N(A + NP)}{DH}} \quad (3)$$

#### Average Range of Coverage:

An important reference value is the inventory-sales ratio. It tells something about the long-term efficiency of a stock control system. Hence for an optimal ordering policy

$$\text{Average Inventory/Average Sales} = (Q^*/2D) = \sqrt{\frac{N(A + NP)}{2HD}} \quad (4)$$

Research has shown that, in spite of operations research, the average inventory holdings in the last two decades have increased. There are two reasons for this:

1. Wages and salaries have increased sharply so that the rate  $\left( (A + NP) \frac{N}{H} \right)$  increased inspite of increasing interest costs  $\left( \frac{H}{N} \text{ increases} \right)$  and the decrease in part of the fixed costs through EDP.
2. Decentralization has increased the number of warehouses. Moreover, type variants (product variations) have increased such that the demand rate per variant and stock location have decreased which according to (4) leads to an increase in the average range of coverage.

Returns to scale can also be seen from (4). The inventory-sales ratio of a company becomes more favorable with increasing sales volume. This, however, says something about the cost. The following section deals with cost considerations.

### ***COSTS AND SENSITIVITY:***

**(i) Cost:** The cost function  $C$  from equation (1) has among others a proportional ordering cost  $bD$ . It can be seen that this term does not influence the optimal lot size. Over a long period of time, these ordering costs cannot be avoided and they can be considered as fixed costs. Therefore, these non-influential terms are ignored in optimization. Let the new cost function without the ordering cost be  $c = C - bD$ . For a

$$\text{period of length } t \text{ we have } c = \frac{(A + NP)}{t} + \frac{HQ}{2N} \quad (5)$$

$$\text{For an optimal ordering quantity } Q^* \text{ we have } c = \sqrt{\frac{2DH(A + NP)}{N}} \quad (6)$$

As is to be expected, the cost of an order cycle per unit time increases with increasing sales volume. The increase, however, is sub-linear.  $c \sim \sqrt{D}$

$$\text{For the unit cost } \bar{c} = \frac{c}{D} \text{ per time unit } \bar{c} = \sqrt{\frac{2H(A + NP)}{DN}} \quad (7)$$

It decreases, therefore, with increasing turnover.  $\bar{c} \sim \frac{1}{\sqrt{D}}$  This also shows the effect of increasing returns to scale (an advantage of bigger firms). The reason for this is **INDIVISIBILITY**, in our case, the indivisibility of the fixed order costs. Whether the order quantity is small or large, the fixed order costs, remain the same.

In many large firms, however, inventory is decentralized. Because of this, the scaling effect is partly lost as shown in the following consideration. With  $m$  warehouses a single warehouse will have a demand rate

of  $D/m$ . Let the total demand be  $D$ . With decentralization, the total cost per cycle is then

$$m\sqrt{\frac{2(A+NP)DH}{N}} = \sqrt{m} c$$

That is larger than centralization by a factor of  $\sqrt{m}$ . Decentralization has often been justified in the course of corporate history and, hence an energetic drive is needed to break out of the imposing structures and to reorganize the logistics. A similar stimulus in the form of high interest rates happened at the beginning of the eighties as one tried hard to rationalize the sales income of a corporation to free liquid resources. This resulted in the centralization of inventory in many firms.

One should not ignore, however, the advantage of decentralization: improved customer service. This is not expressed in the above formulas (5) and (6). For instance, they do not include the cost of transportation.

### SENSITIVITY:

The partial derivative  $\frac{\partial c}{\partial x}$  gives information about how a change in each variable  $x$  affects the cost  $C^*$ . It is

$$\frac{\partial c}{\partial D} = \sqrt{\frac{H(A+NP)}{2ND}}; \quad \frac{\partial c}{\partial (A+NP)} = \sqrt{\frac{DH}{2N(A+NP)}}; \quad \frac{\partial c}{\partial \left(\frac{H}{N}\right)} = \sqrt{\frac{ND(A+NP)}{2H}}.$$

These values, however, are dependent on the chosen units. One of the more important ratios is the elasticity  $e$ . It measures the relationship of the relative changes of two quantities

$$\varepsilon_{c,D} = \frac{\frac{\partial c}{\partial D}}{\frac{c}{D}}$$

(7)

The elasticity can also be represented as a logarithmic derivative.

$$\varepsilon_{c,D} = \frac{\partial \ln c}{\partial \ln D}. \quad \text{The elasticity of } c \text{ in relation to } (A+NP) \text{ and } \left(\frac{H}{N}\right) \text{ are } \varepsilon_{c,(A+NP)} = \frac{\partial \ln c}{\partial \ln(A+NP)} \text{ and } \varepsilon_{c,\left(\frac{H}{N}\right)} = \frac{\partial \ln c}{\partial \ln\left(\frac{H}{N}\right)} \text{ respectively.}$$

$$\text{With } c = \sqrt{\frac{2HD(A+NP)}{N}} \text{ one obtains } \varepsilon_{c,D} = \varepsilon_{c,(A+NP)} = \varepsilon_{c,\left(\frac{H}{N}\right)} = \frac{1}{2}$$

The elasticity of cost per period in relation to  $D$ ,  $\frac{H}{N}$ ,  $(A+NP)$  is always  $\frac{1}{2}$ . If, for example, the cost of  $(A+NP)$  or  $\frac{H}{N}$  increase by  $p\%$ , then the total cost  $c$  per period increase by  $\frac{p}{2}\%$ . The same is true for the cost unit  $\bar{c}$ . It is important to be sure about the sensitivity of  $c$  and  $\bar{c}$ , because it can rarely be assumed in practice that  $(A+NP)$  and  $\frac{H}{N}$  can be exactly determined. The cost sensitivity in relation to changes in lot

sizes,  $\frac{\partial c}{\partial Q}$ , is also interesting. It is not always possible to realize the minimum cost  $c$ . Some of the reasons

are technical conditions (container size, truck or tank capacity), special packaging or an arbitrary order cycle: week, month or quarter. Let us denote for a moment the optimal value, with an asterisk (\*). With the help of the Taylor expansion about  $c^*$ , we compute the cost difference  $c - c^*$ . It is

$$c = c(Q) = \frac{(A + NP)D}{Q} + \frac{QH}{2N} \quad (\text{compare with 5})$$

$$\frac{\partial c}{\partial Q} = -\frac{(A + NP)D}{Q^2} + \frac{H}{2N} \quad \text{and} \quad \frac{\partial^2 c}{\partial Q^2} = \frac{2(A + NP)D}{Q^3} \quad \text{And hence,}$$

$$c - c^* = 0 + \frac{(Q - Q^*)^2}{2} \cdot \frac{2(A + NP)D}{(Q^*)^3} + \dots$$



The linear term disappears, since  $\left. \frac{\partial c}{\partial Q} \right|_{Q^*} = 0$

Ignoring higher terms we have  $c - c^* = D(A + NP) \frac{(Q - Q^*)^2}{(Q^*)^3}$

How much it amounts to must be checked in each case.

### HYPOTHETICAL PROBLEM:

$A = \text{Rs. 4 per order}$ ,  $N = 4$ ,  $P = \text{Re 1}$ ,  $H = \text{Rs. 0.04}$ ,  $D = 1 \text{ unit/day}$

Let  $(A + NP) = \text{Rs. 8}$ ,  $\frac{H}{N} = \text{Re 0.01/day}$  and unit,  $D = 1 \text{ unit/day}$ . Then

$Q^* = \sqrt{2D(A + NP) \frac{H}{N}} = 40 \text{ units}$ . This lot size is enough for 40 days. The cost  $c^*$  per day is  $c^* =$

$$\sqrt{\frac{2DH(A + NP)}{N}} = \text{Re 0.4}$$

The goods, however, can only be obtained in minimum lot sizes of 45 units.  $Q = 45$ . How much is the increase in cost per day?

$$c - c^* \approx D(A + NP) \frac{(Q - Q^*)^2}{(Q^*)^3} = \text{Re 0.00129} \approx \text{Re 0.0022}$$

This is an overestimate. The actual cost difference where  $c$  is computed according to (6.5) amounts to Re 0.01. This means that  $\Delta c/c = 2.5\%$  for every change  $\Delta Q/Q$  of 11.11%. Average deviation from the optimal lot size is therefore not very noticeable. Reason:  $\Delta c$  is in the first approximation quadratic in  $\Delta Q$ .

We also have consider the hypothetical problem with  $D = 60000 \text{ units}$ ,  $A = \text{Rs.80.00 per order}$ ,  $H = \text{Rs.1.00 per unit per year}$ ,  $N = 6$ ,  $P = \text{Rs. 20 per shipment}$ ,  $\alpha = 1000$ ,  $\beta = 0.05$ ,  $b = 0.0001$

(I) Usual EOQ Approach:

Assuming that the classical EOQ model is currently in use

$$Q^* = \sqrt{2DA/H} = \sqrt{2 * 60000 * 80/1} = 3098.39 \text{ units}$$

$$C^* = \sqrt{2 * D * A * H} = \text{Rs. } 3098.39$$

(II) Assuming Demand To Be Fixed In JIT Purchasing Approach:

$$Q^* = \sqrt{\{2N(A + NP)D\}/H} = \sqrt{\{2 * 6 * (80 + 6(20)) * 60000\}} = 12000 \text{ units}$$

$$C^* = \sqrt{\{2H(A + NP)D\}/N} + bD = \text{Rs. } 2006$$

**ABC Analysis:**

The abbreviation RM stands for the Latin “reduction and maximum”. In an RM-system, the goods are arranged according to importance. The importance of good is considered according to its sales volume  $D_i b_i$ , measured in terms of its buying price (and not by its selling price for which we measure costs). In our model, the buying price is the proportional ordering cost  $b_i$ . Earlier research has shown that the goods may be roughly classified into three classes

<u>Class</u>	<u>Number of Items</u>	<u>Approximate</u>	$\sum D_i b_i$
A	20% 65%		
B	40% 27%		
C	40% 9%		

This type of classification is popularly known as ABC-Analysis.

Is  $Db$  actually the right criterion for a classification based on cost? The cost function is  $c$

$= \sqrt{2 \frac{H}{N} (A + NP)D}$ . Accordingly, the criterion should be  $\frac{H}{N} (A + NP)D$ . If, however,  $(A + NP)$  is constant for

all goods and  $\frac{H}{N} \sim b$  (interest cost) then  $Db \sim \frac{H}{N} (A + NP)D$ . This gives the theoretical justification to us  $Db$

as a measure for the cost that causes one to hold inventory. The purpose of an ABC classification is to save inventory management costs. Only goods of class A (highest importance) are handled according to the best possible methods. Note: In this case, continuous stock control is often necessary. The simplest inventory models are used for goods in classes B and C.

**REMARK:**

From the above table it is evident that for given values of parameters using JIT purchasing concept results shows significant decrease in total annual cost per unit price. Although the magnitude of investment cost and saving from JIT concepts are specific to the parameter used in the table. One has to start with smaller contract quantities that is ordering Batch wise [EBQ] and moving towards implementation of JIT concepts by increasing contract quantity gradually which results in significant amount of cost savings which is evident from the above table.

We can summarize the following features of JIT purchasing inventory model, which are as follows:



1. Increase in the optimum number of shipments results in decrease in total cost.
2. Increase in contract quantity results in significant decrease in total cost, which confirms direct relationship between contract quantity and cost savings. That is as contract quantity increases cost saving by implementing JIT purchasing inventory model also increases.

With the technical advancement JIT concepts are highly appreciated and successfully implemented in most of the Asian countries. Today India is also successfully implementing JIT concepts in various industries. For example CEAT TYRES used JIT for inventory reduction and management. Similarly other known companies like Federal Express, Samtel Colors, Wipro Corporation, Sundaram Brake Linings, Jindal Vijayanagar Steel etc. implemented JIT concepts and yielded significant positive results.

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## EMPLOYEE RETENTION STRATEGIES

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### ABSTRACT

*The main purpose of retention is to prevent the loss of competent employees from the organisation, which could have an adverse effect on productivity and service delivery. Also, retention allows senior and line managers to attract and effectively retain critical skills and high performing employees. This is achieved by providing these managers with information on retention and retention strategies that will ensure that the goals and objectives of the organisation are realised. Employee retention is one of the most critical issues facing organisational managers as a result of the shortage of skilled manpower, economic growth and high employee turnover. Employee turnover occurs when employees leave their jobs and must be replaced. The world web dictionary defines employee turnover “as the ratio of the number of workers that had to be replaced in a given time period to the average number of workers”. In this paper I have covered the relationship of employee retention with employee turnover. Reasons of employee turnover with its real life applications are also covered.*

*Key words: Employee retention, Employee Turnover, Industry*

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Retention is a voluntary move by an organisation to create an environment which engages employees for long term. According to **Chaminade (2007: 1)**, this attachment relationship should be durable and constant and link the employee to the organisation by common values and by the way in which the organization responds to the needs of the employees. The **main purpose of retention** is to prevent the loss of competent employees from the organisation, which could have an adverse effect on productivity and service delivery. Also, retention allows senior and line managers to attract and effectively retain critical skills and high performing employees. This is achieved by providing these managers with information on retention and retention strategies that will ensure that the goals and objectives of the organisation are realised. Creating a retention strategy means placing the employees' needs and expectations at the centre of the organisation's long-term agenda in order to ensure the professional satisfaction of the employee and create a trusted relationship. In this stable relationship, the employee remains in the organization by personal choice based on free will and considered decision. Retention of employees is crucial to the overall success of any organisation. With effective retention policies in place, managers are able to keep the employee turnover at a manageable rate. It is imperative for organisations through the employment process, to attract quality employees to the organisation. However, it is more important for managers to device strategies with which to retain these talented employees in the service of their organisations in order for employers to benefit from the investment already made in them. Employee retention is one of the most critical issues facing organisational managers as a result of the shortage of skilled manpower, economic growth and high employee turnover. **Phillips and Connell (2002: 1)** state that employee retention involves being sensitive to employees' needs and demonstrating the various

strategies in meeting those needs. These strategies, according to **Czakan (2005: 8)** include career growth and development, competitive compensation benefits, opportunities for training and supportive management. Apart from the strategies mentioned above, employers should use a flexible approach to encourage retention and this approach should consider a number of value-adding components. Such components, **Brown (2006: 2)** contends include mentoring/coaching, opportunities for skill and career development, as well as flexibility around the frequency and size of performance rewards and incentives. The whole process of retention is to ensure that employees are retained in the organisation, especially employees with valued or needed skills or experience in a scarce/critical field (where recruitment is difficult).

## EMPLOYEE TURNOVER

Employee turnover occurs when employees leave their jobs and must be replaced. The world web dictionary defines employee turnover “as the ratio of the number of workers that had to be replaced in a given time period to the average number of workers”. The **Chartered Institute of Personnel and Development (2007:1)** defines employee turnover as the “ratio comparison of the number of employees an organisation must replace in a given time period to the average number of total employees”. In their own definition, **Abassi and Hollman (2000: 305)** define turnover as the “rotation of employees around the labour market; between firms, jobs and occupations; and between the states of employment and unemployment”. Turnover, according to **Iverson and Pullman (2000: 980)** can be classified as voluntary (to include withdrawals out of volition) or involuntary (to include layoffs and dismissals).

Voluntary turnover often results in departing employees migrating, in most cases, to competing firms, creating a more critical situation since their transferred knowledge can be used to gain competitive advantage. Turnover is a costly expense and a huge concern to employers and must be avoided. High turnover represents a considerable burden on human resource and line managers, who constantly have to recruit and train new employees. Given the intense search for talent by various organisations the world over, the above background to the context of retention and turnover present a number of challenges to HR practitioners and top management. The core of these challenges revolves around the inability of organisations to retain high performing employees. These challenges require that top management, in consultation with the human resources managers, formulate and implement a comprehensive strategic retention programme that will attract and retain talented employees. Such programmes should take into consideration variables such as base pay and other financial incentives, career growth and development, training and skills development, a good working environment, the recognition of good performance and others. **Smit and Cronje (2002:344)** consider some of these variables as crucial in rating organisations. These have helped these organisations in retaining high caliber employees and also in maintaining low turnover rates.

## REASONS FOR EMPLOYEE TURNOVER

Many reasons explain why employees withdraw from an organisation especially in an economy where skills are relatively scarce and recruitment is costly, or where it takes several months to fill vacant positions. Employees voluntarily resign their appointments in organisations for various reasons which can be classified into two: **pull and push factors**. The pull factors, according to **Sherratt (2000: 38)** include the attraction of a new job especially in a growing economy with many job opportunities, or resignation

by employees from an organisation to go into private business. In such cases, it is the availability of alternative jobs that attracts an employee to withdraw from a particular organisation. **Sherratt (2000:38)** also explains that the push factor may be dissatisfaction with the present job that motivates an employee to seek alternative employment elsewhere. Sometimes, it is a mixture of both the pull and push factors. However, some reasons for leaving are entirely explained by domestic circumstances outside the control of any employer, as is the case when employees relocate with their spouses or partners. Recent research by the **British Chartered Institute of Personnel and Development (2006: 1)** shows that push factors are a great deal more significant in most resignations than most managers appreciate. The research contends that it is relatively rare for people to leave jobs in which they are happy, even when offered higher pay elsewhere. Research conducted by the Hay group and reported by **Sharman et al. (2006: 22)** reveals that about one third of the millions of employees surveyed worldwide plan to quit their jobs within two years. In a period of economic boom, it is a common practice for upwardly mobile professionals to hop from one job to another.

One important push factor that leads to early turnover of new employees is the unrealistic expectations and general lack of knowledge by many job applicants about the nature of the job at the time of employment. **Schultz and Schultz (2006:243)** state that unrealistic expectations cause many employees to resign their appointments soon after taking up a new job. Many job applicants have unrealistic expectations about their dream jobs but get disillusioned when such expectations are dashed by their employers. Some employers attract job applicants with unrealistic and non-existent conditions of service during interviews. However, when these new employees get on board and the conditions of service promised by the employers are not forthcoming, such employees immediately update their resumes and quit for other jobs. The British Chartered Institute of Personnel and Development (2006: 2) notes that a great deal of employee turnover consists of people resigning or being dismissed in the first few months of employment. This is due to poor recruitment and selection decisions, both on the part of the employee and employer. Expectations are high during the recruitment process, leading applicants to compete for and accept jobs for which they are mostly not suited. Organisations do this in order to ensure that they fill their vacancies with sufficient numbers of well qualified candidates as quickly as possible. However, over the longer term, the practice becomes counter-productive as it leads to costly but avoidable turnover and the development of a poor reputation in the local labour market. According to a study by the **Chartered Institute of Personnel and Development (2006: 2)** in the United Kingdom (UK), there are factors that are specific to the individual that can influence early turnover. These include both personal and trait-based factors. Personal factors include changes in family situation, a desire to learn a new skill or trade, or an unsolicited job offer. In addition to these personal factors, there are also trait-based or personality features that are associated with turnover. These personality traits are some of the same characteristics that predict job performance and counter-productive behaviours such as loafing, absenteeism, theft, substance abuse on the job, and sabotage of employer's equipment or production. Most environmental contributors to turnover can be traced to management practices. Turnover tends to be higher in environments where employees feel they are taken advantage of, feel undervalued and inadequately compensated. Management practices that promote inequity, inefficiency and lack of foresight and ability to provide purposeful leadership will encourage skilled and professional employees to leave the organisation. **Kinnear and Sutherland (2001: 17)** further argue that skilled employees need space to act independently and freedom to plan and execute work the best way they choose. This requires progressive organizational

leadership which allows for independent judgment by employees. Managers can help to address this by removing organisational policies that restrict innovative thinking and practice within the organisation. Certain jobs have peculiar characteristics that contribute to turnover. According to **Lanyon (2007: 45)** some jobs are characteristically more attractive than others. Someone who enjoys travelling long distances will find sales job attractive while a personality with a strong ability to convince others through argument may find satisfaction in advocacy jobs. However, if these personalities engage in jobs with characteristics other than those peculiar to them, they may not find job satisfaction, which will lead to turnover.

**Sherratt (2000: 38)** posits that there is turnover that is demographically specific, particularly for women who are balancing significant work and family duties at the same time. Employees may choose to leave an organisation instead of sacrificing their other interests and responsibilities in order to make the job work out. Some women elect to quit their jobs after the birth of a child, rather than simply take maternity leave while some relocate with their spouses. These factors translate into higher turnover rates for women in most organisations. Although money may not be the most important consideration in the turnover intent of some skilled employees, nevertheless, money remains an important factor in turnover decisions. The Towers Perrin study (cited in HR Focus, 2003: 3) shows that variables that motivate talented employees to remain in an organisation are a mixture of both intrinsic and extrinsic factors such as performance-based pay, employee stock ownership, and profit-sharing bonuses. Others include meaningful and challenging work, good supervisors, and development opportunities. **Birt et al. (2004: 28)** note that variables such as the need for organisational provision of resources to help employees cope with stress, attention to the physical work environment (in terms of facilities, office space, storage space, and car park), and the negative effect of corporate politics are also critical to employee retention practice. Managers should incorporate these factors in their retention policies and review their effectiveness from time to time as employees' needs are dynamic and changes over time.

Empirical evidence has shown that all the factors enumerated above act individually or collectively to inform an employee's decision to quit or remain in an organisation. Over time, money is considered as the most critical determinant of turnover. However, that assumption has changed. The new breed of professionals and highly skilled employees now place other factors such as career growth, skills development and training opportunities in the fore of motivational variables that determine which organisation to work for. For organisations to attract and retain quality employees, these variables must be evaluated and integrated into an effective employee retention programme of the organisation. It is thus important for organisations to first of all recognise what motivates an individual employee before a meaningful retention practice can be developed. There can be various motivational factors which can influence the individual, organizational and on societal behavior regarding the retention of employees.

## **INCENTIVES STRATEGY IN APPLICATION**

### **1. Incentives for individual motivation**

Incentive measures, such as salaries, secondary benefits, and intangible rewards, recognition or sanctions have traditionally been used to motivate employees to increase performance. Motivators may be positive and/or negative. Reducing dis-incentives or perverse incentives that favour non-conducive behaviour, can often be more important than inventing new incentives.

**Box 1** indicates a menu of options from which incentives can be combined into packages.

**Incentives that impact on motivation of staff**

- Pay, Salaries, “efficiency wages” etc.
- Direct financial benefits, such as Pension, illness/health/life insurance; allowances (clothing, housing, etc.), subsidies, gain sharing,
- Indirect financial benefits such as subsidized meals/clothing/ accommodation/ transport, scholarships, tax breaks; etc., deferred compensation such as seniority pay,
- Flexible schedules, part-time/ temporary work; sabbatical, study leave, holidays, vacation, etc.
- Work environment/conditions, occupational health, safety, recreational facilities
- Amenities, school access, infrastructure, transport, etc.
- Job security; Career/ professional development/ training opportunities
- Feedback, coaching, valued by organization
- Solidarity, socializing, camaraderie, affection, passion
- Status, prestige, recognition
- Sense of duty, purpose, mission
- Security, opportunities, stability, risk

Thus incentives can be financial, which come in some form of payment or cash transfers. Some of the financial incentives are direct such as salary, pension, insurance, bonuses, etc. Others are indirect such as subsidized meals, clothes or housing. It is important to make a distinction between a proper level of pay and special incentive pay to reward performance. In the private sector financial incentives are generally associated with better performance although perverse impacts can also be observed. Cash awards are shown to have a higher value where remuneration is low. Conditions in the public sector differ significantly from those in the private Sector. Non-financial incentives come in many forms such as gifts, rewards, travel. Some are more tangible than others since they are visible and/or can be compared to financial benefits. Less tangible incentives relate for instance to work flexibility, independence of working, recognition of one’s work, the possibility of advancement. The value of non-financial material incentives seems to be perceived as a function of psychological processes. There is also a distinction to be made between formal incentives and informal ones. Formal ones are for instance salary scales and staff entitlements. Informal ones may also be legitimate depending on the context but can also represent channels reaping personal benefits through corrupt practices or patronage. There are also a range of distinctions to be made for non-materialistic incentives. Like generally materialistic incentives, non-materialistic incentives can be “self-interested”, such as psychological benefits related to the status of power. On the other hand they can be of a genuinely “altruistic” nature, based on own desires and moral



believes. For a long time, it was thought that intrinsic and extrinsic motivations were additive and could easily be combined to produce optimal performance. Today it is recognized that there are trade offs. Motivations also have a dynamic nature. As the context and trends change, people also adapt their views and preferences. Different professional groups respond differently. There is an evolution over time where motivations change with age. While the opportunity for travel, for instance, may be very attractive for young, single professionals, it may become a burden for a family setting. Motivations and responsiveness to incentives also is a function of gender.

## **2. Incentives for organizational motivations**

Incentive systems are an important part of organizational motivation and are central to helping diagnosticians understand the forces that drive the organization. Organizational incentives refer to both the reason for staff to join an organization, and the way an organization rewards and punishes its staff. Incentive systems can encourage or discourage employee and work group behaviour. Organizations must continually seek ways to keep their employees and work groups engaged in their work, motivated, efficient and productive. An organization's success can depend on its ability to create the conditions and systems (formal and informal) that entice the best people to work there. Also, a good incentive system encourages employees to be productive and creative, fosters loyalty among those who are most productive, and stimulates innovation.

Incentive systems reside within organizations, their structure, rules, human resource management, opportunities, internal benefits, rewards and sanctions, etc. Whether based on perception or reality, organizational incentive systems do have a significant influence on the performance of individuals and thus the organization overall. A study of Ghana's public sector concludes that "The significance of internal factors in creating positive organizational cultures suggests that many of the changes needed to transform public organizations could be initiated by the organizations themselves without substantial external support."

## **3. Incentives and societal motivation**

Perhaps the most pervasive structural motivators and incentives are located at the societal level, such as security, rule of law, investment climate, civil service pay or legislation conducive to civic engagement. Whether or not an organisation, for instance, is able to achieve its purpose depends not just on only whether it is adequately resourced but on the incentives generated by the way it is resourced under prevailing rules. Many of these cannot easily be influenced from the perspective of individuals and organizations, although these play a critical role as change agents.

The motivational direction and value of many of the above are directly rooted in the prevailing Governance systems. This begins with inclusive democracy and a rights-based approach to development. Neither incentive mechanisms nor external interventions for capacity development will bear results unless there is the rule of law and a proper legal system. A free press and a vibrant civil society serve as watchdogs to deepen inclusive democracy, bolster support for the protection of human rights and further check the misuse of incentive mechanisms. Changing organizational culture takes time. Changing societal values, culture and rules of the game depends on political processes, negotiation, and in many instances is an issue of generations.



## **CONCLUSION**

The paper revolves around the rate at which employees voluntarily quit their jobs and the inability of organisation managers to devise means of retaining key employees. A significant amount of an organisations value is reposes in its employees and when these employees leave, they take this value away with them. Frequent employee turnover is costly to organisations and destructive to the attainment of organisational goals. Many organisations are not been able to identify properly the real reason(s) key employees leave. Most managers believe that increasing financial benefits of employees would motivate them to remain while others provide attractive working environment as a retention strategy. The present paper therefore sought to determine the extent to which selected motivational variables (Combination of intrinsic and extrinsic variables) were being applied and were influencing employees' decision to remain or quit an organisation. Many contemporary studies still consider monetary reward as the best way of influencing employees' retention. This has prompted many HR managers to tailor their retention policies around financial benefits without taking into consideration research findings which suggest that employees are better motivated by intrinsic rather than extrinsic values as revealed by **Rolando (2000) in Ferreira (2008: 76)**.

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## COAL SECTOR: CHALLENGES AND OPPORTUNITIES

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### ABSTRACT

*Story of Coal Sector in India is very unique in itself. Till date, maximum of 85 coal blocks have been awarded in 1 year (in FY 2005-06) to boost output of coal in India. In 2014, there were no coal block allocated to any of the parties, but, 21 coal blocks were de-allocated in only FY 2013-14. There are various factors leading to lesser production than was targeted and inviting for re-bidding of the same blocks, like; delay in obtaining Environmental and Forest Clearances, land acquisition, Non-resolution of political issues (such as naxalism, mafias, etc.) inadequate coal evacuation infrastructure, lack of quality manpower & Coal Regulator, contractual issues, etc.*

*The result of these have not only lead to increase in use of imported coal as a percentage of total coal (from 2% in FY 2012-13 to 18% in FY 2013-14), but have increased the cost of power generation through coal (thermal coal consumption for power generation was as high as 95% in FY 2011-12 and upto 67% in FY 2012-13) because of revised fuel mix and non-operation of many power plants because of lack of fuel. The result is being reflected in the results of the power procurement bids in recent times. There is stagnation in the domestic coal production (532 MT in FY 2009-10 and 540 MT in FY 2011-12) whereas coal import have increased from 59 MT in FY 2008-09 to 138 MT in FY 2012-13.*

*Biggest coal producer in China have only 8% of the country's production, 23% in US and 11% in Australia, whereas, in India, Coal India Limited (CIL) alone produces 81% of the total coal production in the country.*

*There is an immediate requirement of start-up of various coal blocks in India at an efficient level (Output per employee per year of CIL is 1,173 Tonne in comparison to 10,658 tonne in Australia and 11,413 tonne in US) along with a coal regulator. There is a requirement of effective co-ordination between various approval agencies for proper development of the sector and other sectors have direct/indirect impact of this sector.*

**Keywords:** Coal Block, Coal Regulator, Coal Import, Power Plants

Coal contributes to about 40% of world's total energy needs. Almost 52% of India's primary energy need is fulfilled through coal. India produces approximately 7% of total coal production of the world and is 3<sup>rd</sup> largest coal producing country after China and USA by total coal production. Coal is expected to remain dominant energy source in India because of abundance and cost economics. Other sources like Oil & Gas have got limited production in India and as a result the requirement of the same is met through Import, resulting to lack of new projects requiring Oil/Gas as a fuel.

**Exhibit-1:** Coal Production across the globe (2002-2009)

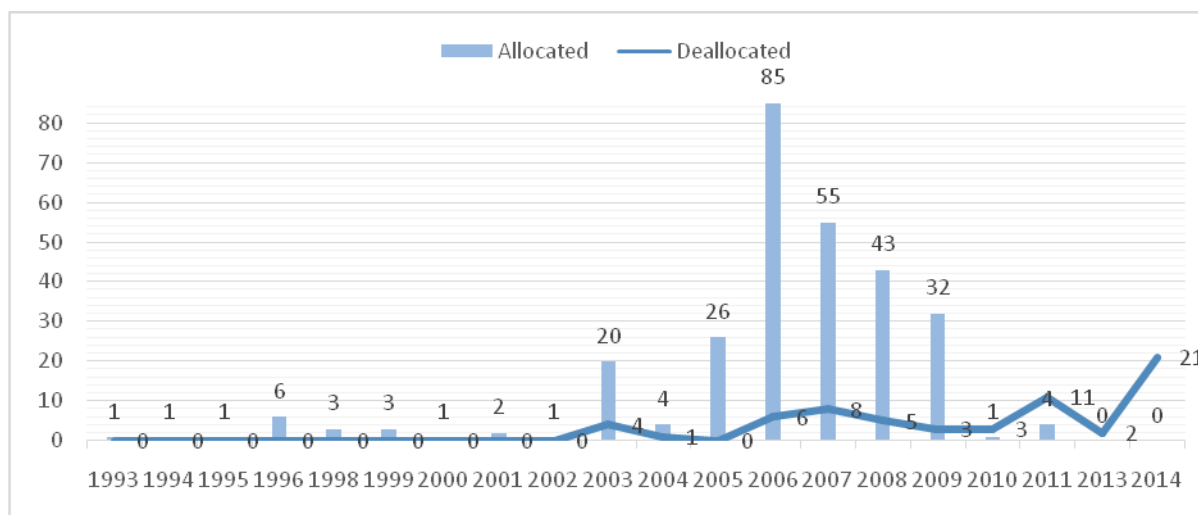
Country							% of Total	
	2002	2003	2004	2005	2006	2007	2008	2009
China	30.0%	33.2%	35.7%	37.4%	38.4%	39.4%	41.3%	43.9%
USA	20.5%	18.7%	18.1%	17.4%	17.0%	16.2%	15.6%	14.0%
India	7.4%	7.2%	7.3%	7.3%	7.3%	7.5%	7.6%	8.0%
South Africa	4.5%	4.6%	4.4%	4.1%	4.0%	3.9%	3.7%	3.6%

Indonesia	2.1%	2.2%	2.4%	2.6%	3.1%	3.4%	3.4%	3.6%
Russian Federation	5.3%	5.3%	5.0%	5.1%	5.0%	4.9%	4.8%	4.3%
Australia	7.0%	6.8%	6.5%	6.4%	6.2%	6.1%	5.9%	5.9%
Others	23.2%	22.0%	20.7%	19.7%	19.1%	18.6%	17.7%	16.6%
<b>Total world</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: India Infraline

Currently, the sector is highly regulated and Coal India Limited (CIL) enjoys monopoly by contributing about 80% of the total coal production in India. The policy of captive mining was introduced in 1993 and first Coal Block was awarded in 1993 to a Power sector organization and till 2002 total 19 coal blocks were awarded to various entities in different sectors. In 2006 alone, 85 Coal Blocks were been awarded followed by 55 Coal blocks in 2007 and 43 coal blocks in 2008. Out of 289 Coal Blocks awarded till FY 2014, more than 50% of the coal blocks have been awarded to power sector and about 40% to Iron & Steel Sector. But, because of various reasons attributable to government as well as private institutions, coal blocks are being deallocated and 24 coal blocks were deallocated in FY 2014 alone whereas no coal blocks was awarded in this tenure. Statistics of Coal Blocks allocated and deallocated is as under:

**Exhibit:**Details of coal blocks awarded each year with geological reserve (1993-2014)



Source: Authors Compilation from various sources

The requirement of coal have increased much higher then the production in India. The production had an average growth rate of 6.5% till FY 2010, but, from 2010-2012 the average growth rate is less than 1%. During the same tenure requirement of coal increased mostly attributable to Power Sector. This impact in the increase in import of coal and the coal import have increased @ 25% during last 5 years (FY 09-13).

**Exhibit-2:** Total Coal Production and Import by India

Total Coal Production in India				
Year	OC	UG	Total Raw Coal	
	MT	MT	MT	Growth %
2002-03	278.11	63.16	341.27	
2003-04	298.49	62.75	361.25	5.85%
2004-05	320.27	62.35	382.62	5.92%
2005-06	346.07	60.97	407.04	6.38%

Total Coal Import	
Year	(MT)
2008-09	59.00
2009-10	73.25
2010-11	68.91
2011-12	102.85
2012-13	137.56

2006-07	373.13	57.70	430.83	5.85%
2007-08	398.18	58.90	457.08	6.09%
2008-09	433.79	58.97	492.76	7.80%
2009-10	473.52	58.52	532.04	7.97%
2010-11	477.84	54.86	532.69	0.12%
2011-12	488.11	51.83	539.94	1.36%

Source: Authors Compilation from various sources

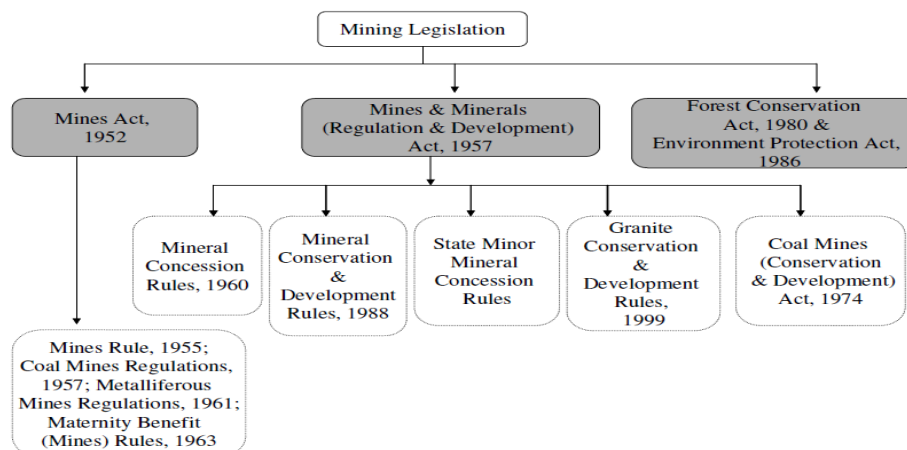
The impact of import of coal (which is costly) have been seen in the last tender results for power purchase. The average tariff for these bids have increased approximately by Rs. 1.00/kWh. The impact is not limited to the results of these bids, but, the sellers/developers are asking for higher cost even after the signing of the contracts.

There are various factors which contribute towards non-operation/Deallocation of Coal Blocks leading to invitation for re-bidding for the same coal block. Coal Blocks are expected to take approximately 48 months for completion of development phase, but various reasons attributable to it does not let the same to happen.

### DELAY IN CLEARANCES AND APPROVALS:

As per the Report of the Export Group (Ministry of Steel), the average time-taken for grant of Mining Lease in Western Australia is 1-2 years, Canada is 1-3 years, Indonesia is less than 1 year and in India it is 7-8 years. Various legislations governing coal mining in India are as under:

**Exhibit-3:** Various legislations governing coal mining in India



Source: Teri-NFA Working Paper No. 9

At Central Level, key ministries/institutions involved include Ministry of Coal (including Coal Controller, Coal mines provident Fund Organization, Commissioner of Payments, Various committees, etc.), Ministry of Mines (MoM), Ministry of Environment and Forest (MoEF), Ministry of Labour (MoL), Central Pollution Control Board (CPCB), Directorate General of Mines Safety (DGMS), etc. There are a number of other ministries/institutions which have a potential impact on coal industry include Ministry of Finance (MoF), Railways (MoR), Power (MoP), Industries (MoI), Steel (MoS), Surface Transportation (MoST), etc.

At State Level, key institutions involved includes Department of Mining, Forest, Environment, etc., State Pollution Control Boards (SPCBs), etc. At Local Level, Municipalities and Panchayats are expected to play an increasing role in environmental management, Land Acquisition, etc.

There are lots of departments & authorities involved at various stages of grant of mining lease process in India:

**Exhibit-4: Approvals and Agencies Involved**

Approvals/Clearances	Authority/Agency Involved
<b>Mining Lease</b>	
Approval or Purchase of Geological Report	CMPDIL (or Mineral Exploration Corporation Limited, Singareni Collieries Company Limited) Directorate General of Civil Aviation and Ministry of Defense (for unexplored blocks if Arial reconnaissance is conceived)
Mine Plan	CMPDIL Coal Controller
Mine Safety	Directorate General of Mine Safety
Mining Technology & Conservation Measures, and Coal Categorization	Coal Controller (under the provisions of Colliery Control Rules and the Coal Mines (Conservation & Development) Act)
Mining Lease	State Government (Mining Department), Ministry of Coal (GoI)- Reviewed at various levels within the Departments at the State & Central Government level
<b>Environment</b>	
Environment Impact Assessment/Environment Management Plan	State Pollution Control Board State Environmental Impact Assessment Authority State Water Resource and Water Supply Department District Administration (for various aspects of site clearance Coal Controller Department of Environment (MoEF)
<b>Forest</b>	
Forest Clearance & Valuing Compensatory Afforestation	Committee to Advise GoI (MoEF) Office of Chief Conservation of Forests (Regional Office of MoEF) State Forest Department & District Authority Department of Forest (MoEF) State Revenue Department
<b>Land Acquisition</b>	Ministry of Coal (under provision of CBAADA) State Department of Revenue
<b>Infrastructure (Electricity, Water, Railways, Road etc.)</b>	Appropriate Departments of the State Govt. & Ministries of Central Govt.

Source: IDFC: Captive Coal Mining by Private Power Developers – Issues and Road Ahead

So, in the current scenario, there is a requirement of setting up Single Window Clearance workable concept for decreasing the timeline for award of mining lease in India. There is an immediate requirement of harmony between different departments to get the clearances in due time and thus development of coal block.

#### **LAND ACQUISITION:**

Land Acquisition have been a very big challenge in these coal bearing areas across the country. This require proper implementation of R&R activities, proper Industrial Relationship and support of local



administration. These problems are further enhanced by illegal encroachment and demand of higher compensations.

**Strikes and Bandhs** at various levels of officials from different subsidiaries are causing lower down of coal production. These all happen because of Poor Industrial Relationship [Pallavi (2013)], false promises by trade union leaders [Masthan (1993)], etc. These incidents impacts in the loss of man-days and thus production loss of lakhs of tonne per annum from various subsidiaries.

#### **INADEQUATE COAL EVACUATION SYSTEM:**

Lack of proper railway/road networking and facilities from them have led to rising Pithead Stocks. In 2011 itself, the pithead stock was more than 70 MT. more than 47% of the coal is transported by railway network followed by 42% transfer by Road. Private Sector are bound to rely more on Road route than railway route for transportation of coal. This increases cost of coal and thus the tariff of the power generated. Indian Railways need to construct/restrict/reallocate network from coal bearing areas to other parts of the country, for which it may switch to PPP mode too.

#### **LACK OF QUALITY MANPOWER:**

Average output per employee in India by CIL is 1,123 tonne compared to 11,413 of USA and 10,658 of Australia. Output per employee is as low as 0.8 tonne/employee (approximately) of CIL. Proper training and effective management of the existing employees is very much required in various subsidiaries of CIL. We also need to implement state of art technology and more advanced mining mechanism to increase the output.

#### **NON-RESOLVING POLITICAL ISSUES:**

Naxalism and mafia are a big factor working against smooth operations related to mining in India. This results in illegal mining and sometimes non-operation of various mining across the country. States like Chhattisgarh, Jharkhand are very much hit by this problem.

There are other concerns too faced by coal sector of the country. One of the reasons for non-operation of some mines in the country is lack of robust geological data. We need to have few more institutions like CMPDI and which can work in a more scientifically manner.

CIL is working towards correcting the logistics and is trying to improve the operations and logistics for coal movement. Rake per day have increased from 167.7rakes/day in FY 2011-12 to 186.4 rakes/day in FY 2012-13. Railways is developing Dedicated Freight Corridor (DFC) for evacuation of coal from coal bearing areas to other parts of the country. Two major DFCs are being developed, Eastern DFC (Kolkata to Ludhiana) and Western Corridor (Mumbai to Delhi) with train length of 1500 metres and load carrying capacity of 15,000/ tonne. Inland Water Authority of India (IWAI) was formed for development of National Waterways (NW) for shipping & navigation and 5 NWs are earmarked as of now. This is expected not only to decrease congestion in coal transportation, but, is also expected to decrease the cost of operation/transportation.

To facilitate harmony between various departments involved, Government have approved to constitute the Coal Regulatory Authority in Jun.'13. May be because of fear of recent Deallocation of many coal blocks, various subsidiaries of CIL and organizations already awarded with mines are coming up with coal Mine Developer-cum-Operator (MDO) tenders. Herein, interested party are invited to extract the coal for a known purpose. If these mines are started in time, **the Euphoria of coal may end and India may be Net Exporter of Coal soon.**



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## DESIGN OF EARTHING FOR EHV SUBSTATION

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### ABSTRACT

*An adequate grounding system is essential to protect the power system by dissipating in to the earth, the energy released by lightning discharges, system fault currents and other system disturbances. This paper describes about the earthing parameters in design aspect of EHV substation. Grounding is an important feature of substation design. Special attention should be provided due to the scene of frequent activity by operating and maintenance personnel, a switching centre upon which continuity of service and place of energy concentration. A well designed earthing system is essential to ensure protection of personnel and equipment from danger associated with fault currents. It is essential that a low electrical resistance to earth is achieved, using good quality conductors with sufficient cross sectional area to carry the expected current flow.*

*Keywords: Neutral earthing, Step potential, Conductor, Grid resistance*

### 1. INTRODUCTION

Electricity being the drive force of our civilization in the last hundred years, the extent of its use is considered as an index of development .like all good things it brings with a degree of danger to life and property due to defects in the electrical apparatus or their usage. Taking in to account the number of lives or property damaged due to electrical shocks and fire accidents caused by electricity. It is necessary and inevitable to think of measures of safety, providing suitable protective equipment can ensure safety from electrical shocks and fires, apart from proper design of the electrical apparatus. One of the important aspects in the operation of the protective equipment is proper earthing.By earthing it means making a connection to the general mass of earth.Earthing also increases the reliability of the supply service as it helps to provide stability of voltage conditions, prevent excessive voltage peaks during disturbances and also as a means of providing a measure of protection against lightning.

Earthing means making an electrical connection to the general mass of earth. Its use is wide spread in the supply network right from the generation to the apparatus on the consumer's premises. This requirement of earthing varies at different points based on the fault level, soil resistivity and the safety considerations.

### 2. OBJECTIVES OF EARTHING

To ensure that no part of equipments other than live parts, should assume a potential this is dangerously different from that of surroundings. To allow sufficient current to flow safely for proper operation of protective devices. To suppress dangerous potential gradients on the earth surface which may cause incorrect operation of control and protective devices and also may cause shock and injury to the personnel.It plays a very important part in increasing the reliability of the supply service and it helps to provide stability of voltage conditions, preventing excessive voltage peaks during disturbances and also in providing protection against lighting surges.

### 3. TYPES OF EARTHING

Earthing can be divided in to neutral earthing and equipment earthing.Neutral earthing deals with the earthing of system neutral to ensure system security and protection, where as equipment earthing deals with earthing non-current carrying parts of equipment to ensure safety to personnel and protection against lightning. Depending on the type of installation generating station ,HV substation, transformer centre ,tower and consumer installations ,suitable earthing system has to be designed duly taking in to consideration, the various requirements such as fault current ,limiting of earth potential rise ,safety of nearby communication circuits and safe body currents.

#### 4. FACTORS TO BE CONSIDERED FOR DESIGN OF EARTHMAT FOR A H.V. SUB-STATION ARE:

- Soil resistivity
- Tolerable limits of body current.
- Fault current.

Earthing system of a H.V. Sub-station plays a major role in the maintenance of the equipment's of the sub-station. A good design of the earthing system not only helps in the proper operation of the protective equipment and also provides safety to equipments and personnel. To achieve the above objectives, the earthing system is designed to discharge the fault current safely into the earth and also to limit the touch and step potentials within the area of the sub-station.

##### 4.1 Design of earthmat

Before designing earthmat, it is necessary to determine the soil resistivity of the area in which H.V. sub-station is to be located. The resistivity of the earth varies considerably from 10 to 10,000  $\Omega\text{mtr.}$  depending upon the types of soil. Further, the resistivity may also vary at different depth depending upon the type of soil, moisture content and temperature etc., at various depths which affects the flow of current due to the fact that the earth fault current is likely to take its path through various layers.

Typical values of resistivity for various types of soils are as follows:

Sl. No.	Nature of Soil	Range of Resistivity
1.	Red loamy soil	40 – 200 $\Omega\text{-m}$
2.	Red sandy soil	200 – 2000 $\Omega\text{-m}$
3.	Laterite soil	300 – 2600 $\Omega\text{-m}$
4.	Shallow black soil	20 – 100 $\Omega\text{-m}$
5.	Medium black soil	50 – 300 $\Omega\text{-m}$
6.	Deep black soil	50 – 250 $\Omega\text{-m}$
7.	Mixed red & black soil	50 – 250 $\Omega\text{-m}$
8.	Coastal alluvium	300 – 1300 $\Omega\text{-m}$
9.	Laterite gravelly	200 – 1000 $\Omega\text{-m}$

Table 1

#### 5. METHOD OF MEASURING THE SOIL RESISTIVITY

The most common method employed in the measurement of soil Resistivity is Wenner's four Electrode method. In this method, four probes are driven into earth along a straight line at equal intervals, say 'S' mtr apart. The current terminals C1 and C2 of an earth tester are connected to outer electrodes and the potential terminals P1 and P2 are connected to linear electrodes. The readings of the earth tester 'R' are recorded while turning the crank at about 135 rpm. The resistivity is calculated from the following formula.

$$\rho = \frac{4\pi S R}{1 + \frac{2S}{\sqrt{S^2 + 4e^2}} - \frac{2S}{\sqrt{4S^2 + 4e^2}}}$$

Where e = depth of burial of the probe in mtr. and is  $> S/20$

If 'e' is  $\ll$  than S the above formula reduces to  $\rho = 2\pi SR \Omega\text{-mtr.}$

To account for the seasonal variations, the average Soil resistivity is multiplied by the factor as shown below, which is termed as the apparent resistivity.

Sl. No.	Season measurement	Multiplication factor
1.	Summer	1
2.	Winter	1.5
3.	Rainy	2

Table 2

Resistivity for design Purpose is arrived by comparing the apparent soil resistivity with the range of the resistivity of the soils as given in Table 2.

If the apparent soil resistivity is more than the minimum of the range of the resistivity of the soil, the apparent soil resistivity is taken if not the minimum of the range of the resistivity of the soil is taken for design purpose.

## 6. CHOICE OF MATERIALS AND SIZE OF EARTHMAT CONDUCTOR:

In olden days, copper was used as the conductor for earthmat, though it is an ideally suited material, from the economic point of view and due to the fact that it is highly prone to thefts, now mild steel conductors are used.

Cross-section of the M.S. conductor in Sq. mm is given by the formula.

$$= I_f * 12.5 * \sqrt{t_c} \text{ Sq. mm. for welded joints}$$

$$= I_f * 15.8 * \sqrt{t_c} \text{ Sq. mm. for bolted joints.}$$

Where  $I_f$  = Fault current in K.Amps.

$t_c$  = fault clearing time in seconds.

Suitable correction shall be made to this cross sectional area by providing an allowance for corrosion as below:

- If  $p > 100 \Omega\text{mtr}$  : no corrosion allowance be made.
- If  $p > 25 < 100 \Omega\text{mtr}$  : an allowance of 15% is to be made.
- If  $p < 25 \Omega\text{mtr}$  : an allowance of 30% is to be made.

### 6.1 Tolerable values of Touch & Step Potential

$$E_{\text{touch}} = [1000 + 1.5 C_s \rho_s] (0.116 / \sqrt{t_s}) \text{ Volts.}$$

Where  $t_s$  = Fault duration in sees.

$\rho_s$  = Surface layer resistivity in  $\Omega\text{mtr}$ .

= 3000  $\Omega\text{mtr}$ . for crushed stone layer.

$$C_s = 1 - a [(1 - \rho / \rho_s) / (2 h_s + a)] .$$

$C_t = 1$  when no protective surface layer or crushed stone is used.

Where  $a = 0.106 \text{ mt}$

$h_s$  = Height of surface layer i.e., thickness of the crushed stone layer which k

$$E_{\text{step}} = [1000 + 6 * C_s * \rho_s] (0.116 / \sqrt{t_s})$$

Where  $\rho_s$  = the resistivity of surface layer = 3000  $\Omega\text{mtr}$  if crushed stone is used, otherwise

$\rho_s = \rho$  = Soil resistivity of the area

## 7. DETERMINATION OF SPACING BETWEEN PARALLEL CONDUCTORS OF THE EARTHMAT:

The minimum length of the total earthmat conductor required to keep the mesh voltages within safe limits is obtained by equating actual  $E_{\text{mesh}}$  to tolerable  $E_{\text{touch}}$ . The result is

$$L_m = \rho K_m K_t I_g \sqrt{t_c}$$

$$(1000 + 1.5 \rho_s) (0.116)$$

Based on the area available for earthmat, the mesh voltage is calculated assuming the spacing between conductors as 10,9,8,7,6,5,4,3,2 for the equivalent area of the mat using the formula.

$$E_{\text{mesh}} = \frac{\rho K_m K_i I_g}{L}$$

Where  $K_m$  = Spacing factor for mesh voltage

$$= \frac{1}{2\pi} \left( \ln \left( \frac{D^2}{16 * h * d} + \frac{(D + 2h)^2}{8 * D * d} - \frac{h}{4 * d} \right) + \frac{K_s}{K_n} \ln \frac{8}{\pi(2n-1)} \right)$$

Where  $D$  = Spacing between parallel conductors in metre

$h$  = depth of burial of ground grid conductors in metre

$d$  = equivalent diameter of grid conductor in metre.

$K_s = 1/(2n)^{2/n}$  for grids with no ground rods or grids with only a few ground rods none located in the corners or on the perimeter.

$K_n = 1$ , for grids with ground rods along the perimeter, or for grids with ground rods in the grid corners, as well as both along the perimeter and throughout the grid area.

Where  $n = \sqrt{n_a * n_b}$

Where  $n_s$  = number of parallel conductors of rectangular grid length wise.

$n_b$  = number of parallel conductors of rectangular grid breadthwise.

$K_i$  = corrected factor for grid geometry.

$$= 0.656 + 0.172 * n$$

$K_h = \sqrt{1 + h/h_0}$  Where  $h_0 = 1$  mt, reference depth of grid.

$I_g$  = Max. Grid current for design purpose.

$$= I_f * D_f * \text{SGF} * \text{CFG}$$

where  $I_f$  = Maximum fault current in K Amps.

$D_f$  = Decrement factor

= 1 for fault duration of more than 0.5 seconds.

CFG = Current flowing in the grid = 0.5

SGF = Station growth factor = 1.5 (Constant)

Hence  $I_g = I_f * 0.75$

$L$  = Total length of the buried grid conductors and the total length of vertical electrodes in mts.

Compare  $E_{\text{mesh}}$  with  $E_{\text{touch}}$  tolerable.

If  $E_{\text{mesh}} < E_{\text{touch}}$ , then calculate

$$E_{\text{step}} \text{ using the formula } E_{\text{step}} = \frac{\rho K_s K_I I_g}{L}$$

Where,

$K_s$  = Spacing factor for step voltage

$$= \frac{1}{\pi} \left( \frac{1}{2h} + \frac{1}{D+h} + \frac{1}{D} * (1 - 0.5)^n \max^{-2} \right)$$

Where  $n_{\text{max}}$  = Maximum of  $n_a$  and  $n_b$

If  $E_{\text{step}}$  is found to be less than the tolerable  $E_{\text{step}}$  already calculated, the assumed spacing between earthmat conductor be adopted. However check whether the total length of the grid conductor as per design is more than the minimum length i.e.,  $L_m$ . Otherwise decrease the spacing and recalculate until the above condition is satisfied.

Invariably, when  $E_{\text{mesh}} < E_{\text{touch}}$  (tolerable),  $E_{\text{step}}$  is also found to be within the tolerable value. If  $E_{\text{mesh}} > E_{\text{touch}}$ , repeat the procedure using the next lower spacing till  $E_{\text{mesh}}$  and  $E_{\text{step}}$  are found to be within tolerable limits

### Calculation of grid resistance $R_g$

$$R_g = \rho / 4 \left( \sqrt{\pi / A} \right) + \rho / L$$

## 8. GROUND POTENTIAL RISE:

$$\text{GPR} = I_g * R_g \text{ Volts;}$$

The equipment earth point or the neutrals of transformers are connected to vertical earth electrodes which in turn are connected to the earth mat. These earth electrodes must be capable of handling the current passing through them under fault conditions and discharge into the earth safely without giving rise to heating. These electrodes also contribute to reduction in the earth resistance because of the fact that they connect layers of the earth up to the depth to which they are driven. These electrodes can be of different materials, size and shapes.

For H.V. Sub-stations, it is found that CI pipes of 2.75 mts long 13 mm thick mm dia are very much suited. The equipment earth points are connected to the electrode using MS plate of the size of the earth mat conductor by welding. Split clamp arrangement required for chosen of the equipment earth point and the earth mat to be CI pipe.

This ensures fair contact to enable to discharge the fault current to the earth through the electrode as well as the earth mat.

## 9. CONCLUSION

For a H.V. station earthing the potential rise and safe touch and step potentials rise and safe touch and step potentials were discussed. It is to be noted that limiting the step and touch potentials to safe value is more important than attaining a low value of the resistance. However the earth resistance of sub-station has to be brought down to the lowest possible level. Thus the concept of grounding procedure and the design calculations were analyzed.

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## IMPROVEMENT OF POWER QUALITY IN REACTIVE POWER USING FC-TCR CIRCUITS

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### ABSTRACT

*This paper describes about the shunt compensation in a power system network to enhance power quality using FACTS devices. Recent power systems facing a lot of challenges in the view of reactive power compensation and control. Due to the increased in electrical power consumption the issue of maintain the power quality in transmission and distribution network become vital. To overcome these issues the model of FC-TCR in the class of SVC is proposed to maintain the voltage profile in the eight bus system with linear load. By the influence of FC-TCR between the buses the change in the real and reactive power in the various nodes has been tabulated. In this paper the circuit of FC-TCR is simulated in MATLAB and also the current drawn by reactor varies at various firing angle is discussed and presented.*

**Keywords:** FACTS, SVC, FC-TCR, VAR.

### 1. INTRODUCTION

Power system network has to operate in very close to or beyond the transfer capabilities which led to overload and congestions. Beyond the generation, transmission and distribution there is need of many working components to operate the power system in stable. One of the major parts is the compensation of reactive power in transmission lines. Most of the electrical energy is in the form of AC only and it is obviously mandate for compensation to maintain the power quality. Most of the industrial loads inductive in nature which led to raise the question of power factor correction. To relieve from the stress and to operate in safe limits FACTS devices is adapted. SVC is the class of shunt compensation which generates and absorbs the reactive power. The two aspects of voltage control and reactive power management on a single activity which provide the reliability across the transmission networks. In this paper FC-TCR is modeled and current drawn by the reactor at various firing angles analyzed. Based on this the optimum control range of a thyristor delay angles from  $\pi/2$  to  $\pi$  is presented. The constant capacitive VAR generation of C is opposed by the variable VAR absorption of the TCR. Also the performance of FC-TCR is executed in eight bus system and analyzed the improvement of real and reactive powers at various nodes were tabulated.

### 2. NEED OF POWER QUALITY

Power quality is referred to as constant and stable power supply .power flow should be pure sinusoidal in specified voltage and frequency limits. Because of the utilities in industries of non linear loads like traction drives, speed adjustable drives and starting of large motors will led to the power disturbances in the power system network. Power quality disturbances are voltage fluctuation, frequency variation and waveform distortion. Subsequently these disturbances will also cause a lagging power factor. Since the voltage variation is the vital consideration in this paper the compensation of reactive power is become dominant. The change in receiving end voltage can be modified by the absorption or supply the reactive power in the transmission line. Shunt compensation FACTS device FC-TCR has been proposed to supply and control the reactive power to meet the demand of load reactive power and allow the source to supply power at unity power factor. Number of ways and methodologies has been exist and executed to enhance the power quality. To maintain a flat voltage profile by having reactive power compensation is discussed here.

### 3. REACTIVE POWER COMPENSATION PRINCIPLES

The reactive power is defined as the AC component of the instantaneous power with a frequency equal to 100/120Hz in a 50Hz or 60Hz systems. Reactive power generated by the power sources is stored in a capacitor (or) reactor during the quarter of a cycle and in the next quarter is sent back to the power source.

In general the reactive power oscillates between the AC source and the capacitor (or) reactor at a frequency equal to the twice of the rated Hz. For the above reason it can be compensated using VAR generators avoiding its circulation between the load and source. Also to regulate the power factor of the system and maintain the voltage stability need to compensate reactive power. The VAR compensation can be implemented with VAR generators or reactors connected in parallel or series.

The compensators or the devices are connected in parallel at middle of the transmission line is shown in Fig-1, which provides the reactive power to the system. Shunt connected reactors are employed to reduce the line over voltages shunt connected capacitors are used to maintain line voltage by compensate the reactive power to the transmission line.

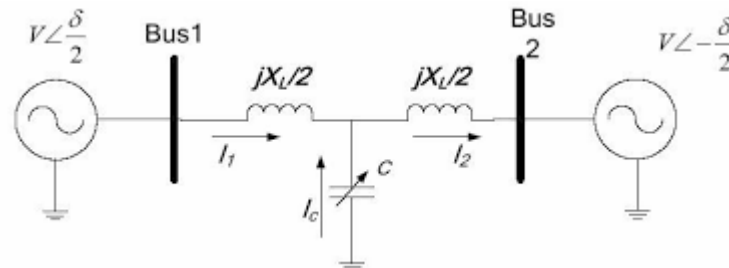


Fig-1 Shunt compensation

#### 4. MODEL OF TCR CIRCUITS

TCR is belongs to the integration of first generation FACTS device which is constitute a reactor connected in series through the bidirectional thyristor valve which shows in Fig-2. The current flows through the reactor is controlled by the firing angle of the thyristor also the current will differ from zero to maximum by vary the delay of firing angle  $\alpha$ . The  $\alpha$  denotes as delay angle point at which the voltage will become positive and the thyristor will become ON and there is a current flow. The thyristor valve is a phase controlled and the delivered reactive power should be

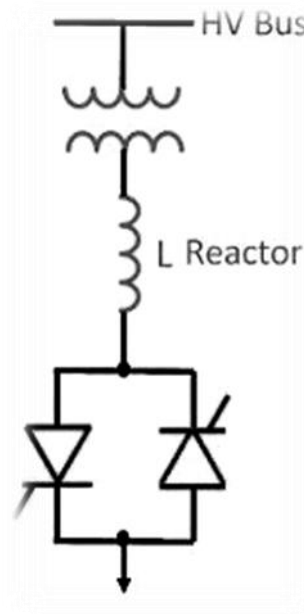


Fig-2 Basic Circuit of TCR

TCR is said to be in full conduction when  $\alpha=\pi/2$  and the RMS current is given by equation (1)

$$I_{tcr-max} = \frac{V_{sdc}}{2\pi F L_{tcr}} \quad \text{----- (1)}$$

Where  $V_{sVC}$  is the RMS value of line to line bus bar voltage to which SVC is connected,

$L_{TCR}$  is the total TCR inductance/phase

As  $\alpha$  increases from  $\pi/2$  to  $\pi$  the current decreases and become non sinusoidal. The TCR current as a function of time is given by equation (2), (3), and (4).

$$wt < \pi - \alpha: I[wt] = I_{(TCR-max)} \sqrt{2}(-\cos(\alpha) - \cos(wt)) \quad \text{----- (2)}$$

$$\alpha < wt < 2\pi - \alpha: I[wt] = I_{(TCR-max)} \sqrt{2}(\cos(\alpha) - \cos(wt)) \quad \text{----- (3)}$$

$$wt > \pi + \alpha: I[wt] = I_{(TCR-max)} \sqrt{2}(-\cos(\alpha) - \cos(wt)) \quad \text{----- (4)}$$

## 5. SIMULATION OF FC-TCR IN POWER SYSTEM NETWORK

An elementary single phase FC-TCR consists of a fixed capacitor connected in parallel with a reactor L and a two antiparallel SCR's is modeled and simulated in MATLAB and shown in the fig-3. The device brought in to conduction by simultaneous apply of gate pulses to SCR's of same polarity. When the applied voltage V the reactor current  $i_L(\alpha)$  and thyristor firing delay angle ( $\alpha$ ). When  $\alpha=0$  the SCR closes and responds to the applied voltage resulting the current in the reactor will be same as steady state like to be a closed switch. At an another attempt of  $\alpha$  is delayed by an angle of  $\pi/2$  with respect to crest of voltage the current in the reactor expressed as

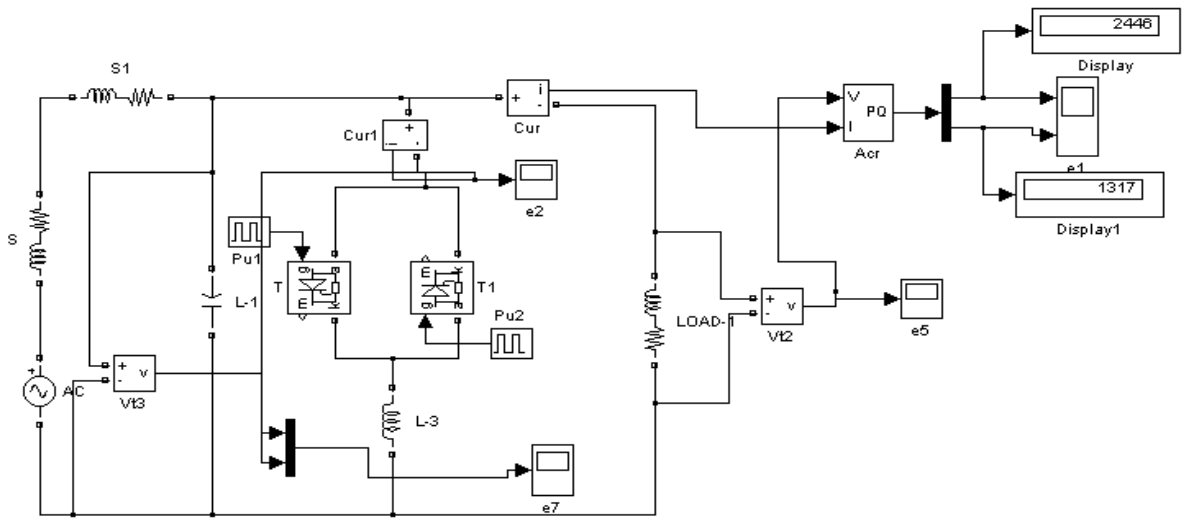


Fig-3 Simulation of FC-TCR Circuit diagram

$$V(t) = V \cos wt \quad \text{----- (5)}$$

$$I_L = \left(\frac{1}{L}\right) \int_{\alpha}^{\omega t} V(t) dt = \left(\frac{V}{\omega L}\right) (\sin wt - \sin \alpha) \quad \text{----- (6)}$$

Since the thyristor valve opens as the current reaches zero is valid for the interval  $\alpha \leq wt \leq \pi - \alpha$ . The fundamental power which deals with the absorption of reactive power can be

$$I_{LF}(\alpha) = \frac{V_m}{\omega L} \left(1 - \frac{2}{\pi} \alpha - \frac{1}{\pi} \sin 2\alpha\right) \quad \text{----- (7)}$$

$$\text{Then the effective reactive admittance is } B(\alpha) = \frac{1}{\omega L} \left(1 - \frac{2}{\pi} \alpha - \frac{1}{\pi} \sin(2\alpha)\right) \quad \text{----- (8)}$$

Where V is the amplitude of the applied voltage

L is the inductance of the TCR

$\omega$  is the angular frequency of the applied voltage.

The variation of the amplitude  $I_{LF}(\alpha)$  normalized to the maximum current  $I_{LFmax}$  is shown as graph in the fig-4 with respect to  $\alpha$  in degree.

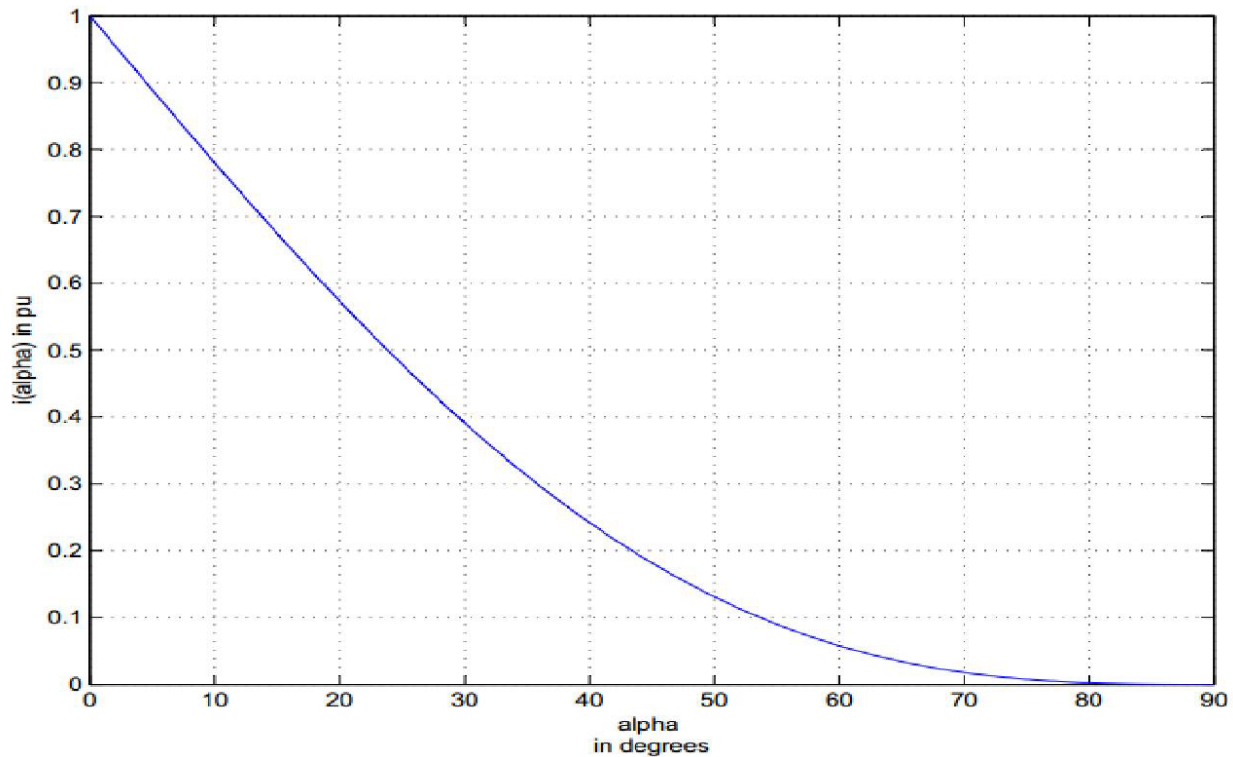
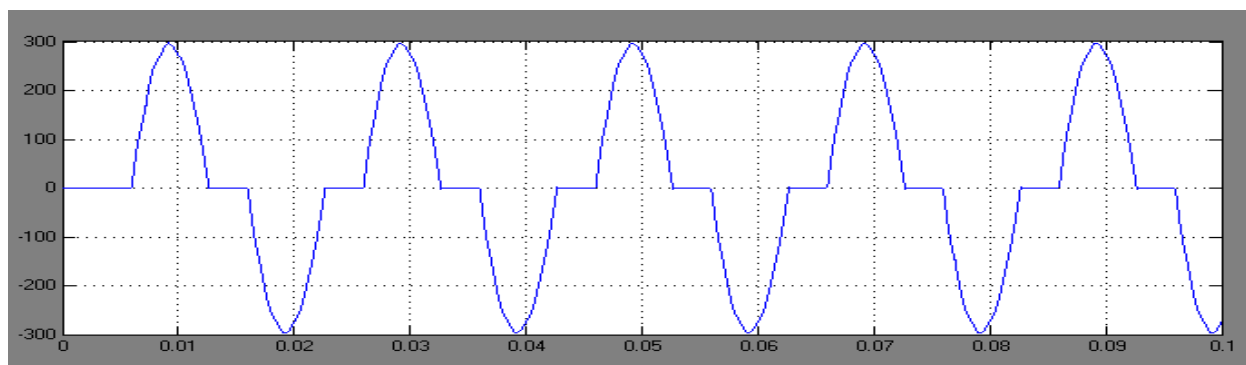


Fig-4 Relation between fundamental value of current in FC-TCR  $[I_{LF}(\alpha)]$  and firing angle  $[\alpha]$

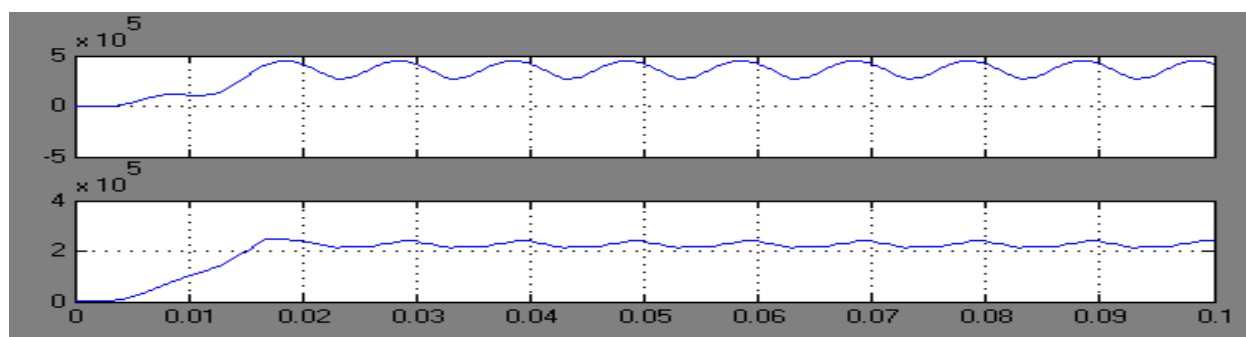
It is clear from Fig.4 the TCR can control the fundamental current continuously from zero (SCR open) to a maximum (SCR closed) as if it was a variable reactive admittance. The fixed capacitor thyristor-controlled reactor type VAR generator may be considered essentially to consist of a variable reactor (controlled by a delay angle  $\alpha$ ) and a fixed capacitor. In constant capacitive VAR generator (Qc) of the fixed capacitor is opposed by the variable VAR absorption (QL) of the thyristor controlled reactor, to yield the total VAR output (Q) required. At the maximum capacitive VAR output, the thyristor-controlled reactor is off ( $\alpha=90^\circ$ ). To decrease the capacitive output, decreasing delay angle  $\alpha$ . At zero VAR output increases the current in the reactor, the capacitive and inductive current becomes equal and thus the capacitive and inductive VARs cancel out. With a further decrease of angle  $\alpha$ , the inductive current becomes larger than the capacitive current, resulting in a net inductive VAR output. At zero delay angles, the thyristor-controlled reactor conducts current over the full  $180^\circ$  interval, resulting in maximum inductive VAR output that is equal to the difference between the VARs generated by the capacitor and those absorbed by the fully conducting reactor. It is evident that current decrease in the reactor with increase in firing angle ( $\alpha$ ). So the optimum value of  $\alpha$  is between  $\pi/2$  to  $\pi$  and chosen here at  $\alpha = 108^\circ$ ,  $\alpha = 144^\circ$ ,  $\alpha = 164^\circ$  and results were obtained.

## 6. RESULTS

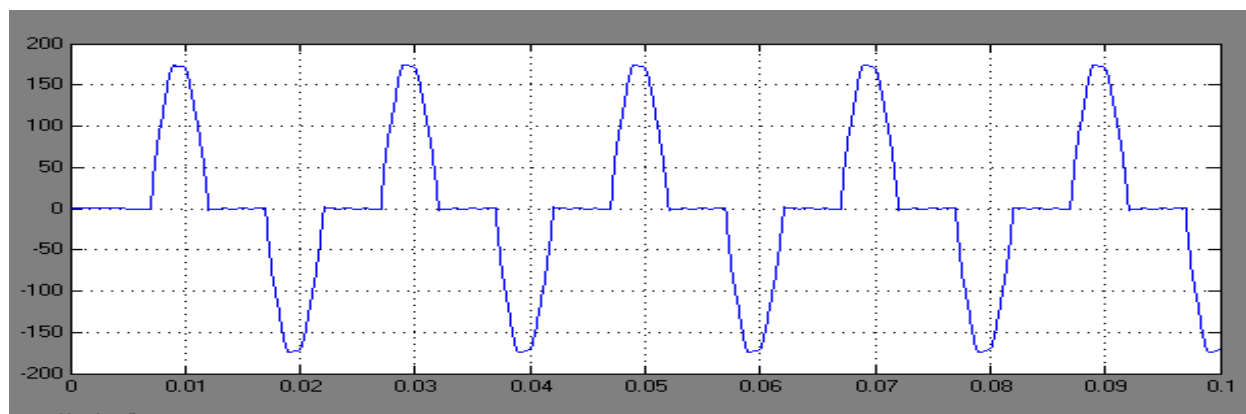
Current waveform through TCR at  $\alpha = 108$  degree



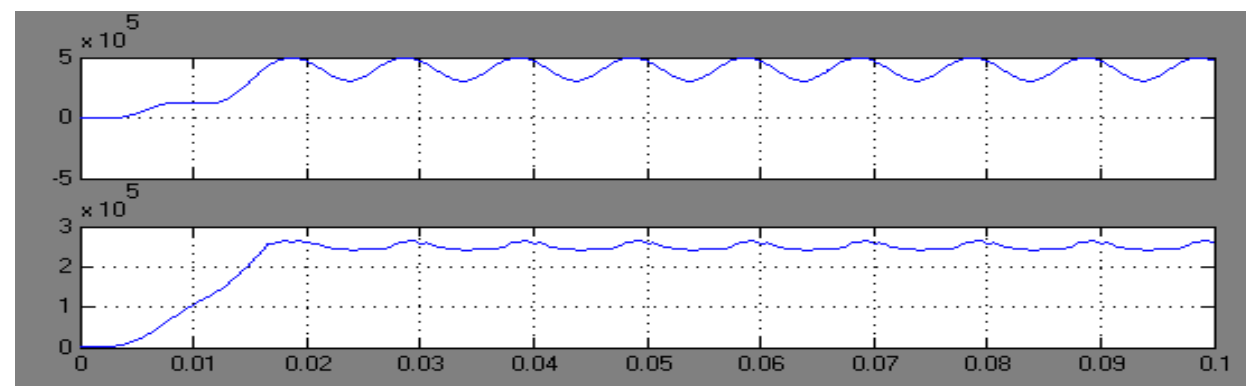
Real and Reactive power at  $\alpha = 108$  degree



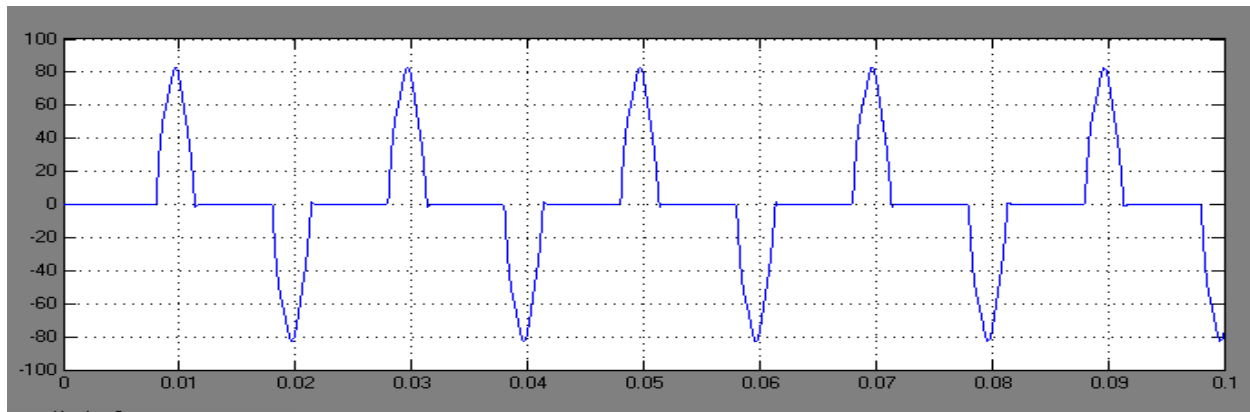
Current waveform through TCR at  $\alpha = 144$  degree



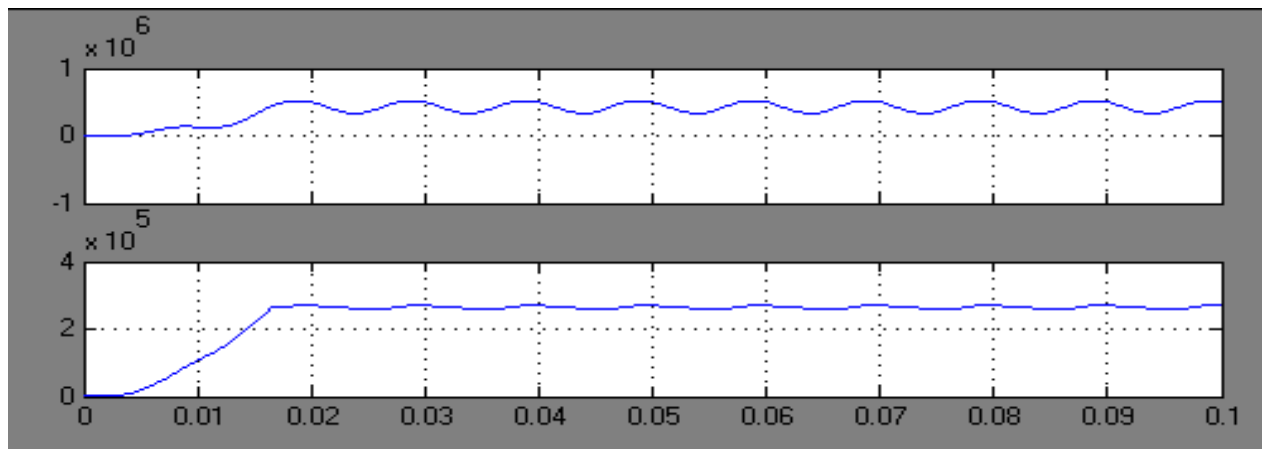
Real and Reactive power at  $\alpha = 144$  degree



Current waveform through TCR at  $\alpha = 162$  degree



Real and Reactive power at  $\alpha = 162$  degree



### 6.1 Simulation results of FC-TCR in power system network:

The application of the FC-TCR is employed to the eight bus system network between the buses to analyze in respect of power quality improvement. The model of the circuit is shown in the fig-5 and fig-6. The changes of real and reactive powers in the system at various nodes are tabulated in table-1.

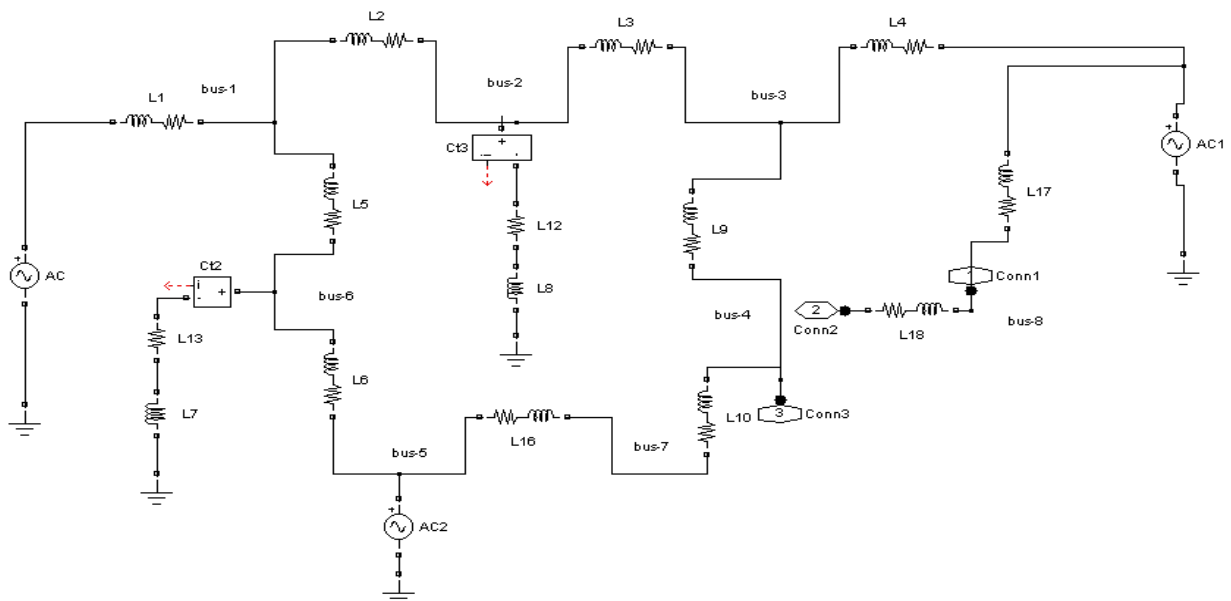


Fig-5 Line model of eight bus system

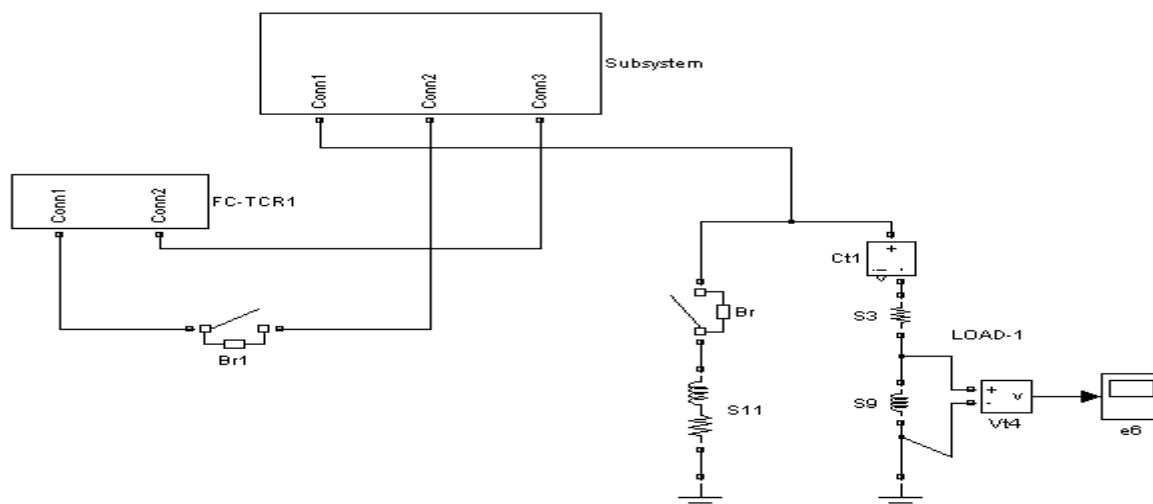


Fig-6 Eight bus system with FC-TCR

BUS Number	REAL POWER( MW) Without Compensation	REAL POWER( MW) With Compensation	REACTIVE POWER ( MVA) Without Compensation	REACTIVE POWER( MVA) With Compensation
BUS-1	0.209	0.217	0.55	0.551
BUS-6	0.143	0.143	0.449	0.449
BUS-2	0.223	0.223	0.680	0.699
BUS-8	0.339	0.342	0.639	0.649

Table-1Improvement of power at various buses

## 7. CONCLUSION

Thus the improvement of power quality and control of reactive power is achieved with the shunt compensation. By varying the  $\alpha$  of FC-TCR to the values between  $\pi/2$  to  $\pi$  the optimum results were obtained. From that it is infer that the value of current decreases in increase with firing angle. Also the smooth improvement of power changes in eight bus system is presented.

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## EMPLOYABILITY OF WOMEN IN INDIAN ARMY

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### INTRODUCTION

Indian society has been viewing men as the face of military carried over traditionally wearing the uniform that will ensure the peace and security by applying in force when required. The use of force is linked with the concept of masculinity that forms a base of fighting a war is therefore essentially viewed as a masculine domain often referring it a male bastion. The debate over inclusion of women in all service of armed forces has been a subject of high debate due to some challenges that do exist making it often a issue of sex equality or gender bias where on other hand it counters the argument that armed forces have been established to ensure integrity of the country where talent and skill should be made the criteria to ensure the achievement of common goal rather than making it a stereotype.

In this man dominated society where the male has been traditionally sought after for fighting for peace, home and family excepting the women like Rani Laxmibai who fought as leader in battlefield dominated by men to fight for her justice and people.<sup>1</sup> The history of women in the military extends over thousands of years where women have played multiple roles in the military which started as ancient warrior women to modern day women who served in conflicts like the Gulf War. Role of women in the military or during war although is not related to direct combat roles and this has brought in controversy in granting women combat roles.

Women have been portrayed differently across globe where mainly they are depicted as a soft hearted nurturer who represent symbol of being at home who need in protection from the outside world which makes it a debate of considering woman as a soldier joining as nation's protector. Increasing number of countries are working on expanding the current role of women in their militaries where records of history are being placed to portray the significant role played by them in military which is being challenged by increasing threats from battlefields.

The right to bear arms is also need to be granted women alongside men besides women as soldiers in war have been also found performing a variety of tasks that includes in as ammunition carriers, picking up a weapon of a fallen soldier, washing, mending , cooking and how can world forget about treating wounded soldiers.

The women officers in Army Medical Corps and Military Nursing Services are administered under different terms and conditions of service and are governed by different policies.

### Historical Perspective

Referring to ancient mythology which has several instances where women are referred as warrior and worshipped as symbol of power. The Greek Goddess Athena, the Roman Diana, the Nordic Valkyries and the Amazons and in Indian context Goddess Durga is a symbol of power<sup>2</sup>. The sacrifice of women for the cause of warfare often told about Amazon's women warriors who cut off one breast to improve their ability to shoot and throw spears<sup>3</sup>. Margaret Corbin is often given reference for her display of courage during the British attack on Fort Washington in the Revolutionary War where she operated cannon until seriously wounded. Other notable accounts include on Indian context are Razia Sultan, Rani Lakshmi Bai of Jhansi, Kittur Chinnamma Rani Durgawati of Gondwana and Chand Bibi of Ahmednagar, the Indian freedom movement is incomplete without mentioning the determination and courage of women who crossed the boundaries of their household to join march against British - Sarojini Naidu, Kamala Devi Chattopadhyaya, Aruna Asaf Ali, Sucheta Kriplani, revolutionaries like Durga Bhabhi, Bina Das, Shanti Gosh and Suniti Chaudhary and in the Indian National Army, 'Colonel' Latika Ghosh and 'Captain' Lakshmi Sahgal Kshatriya are just a few of the prominent names.

<sup>1</sup> See <https://www.indiatoday.in/magazine/leisure/story/20131028-kaveree-bamzai-reviews-the-rani-of-jhansi-by-prince-michael-768103-1999-11-30>

<sup>2</sup> See <https://www.tribuneindia.com/2007/20071202/spectrum/society.htm>

<sup>3</sup> See <https://www.nationalgeographic.com/news/2014/10/141029-amazons-scythians-hunger-games-herodotus-ice-princess-tattoo-cannabis/>

Even after all above contributions there is no record of women warriors dominating the domain which somehow has been indicating that due to whatever physiological or sociological reasons society at large believes the role of women in professions of nurture and culture rather than soldiering for the nation. It is being carried on over generations about women being as great mothers, wives and sisters who have nurtured famous warriors more than getting acknowledged as famous generals or leaders of men in battle. Another observation that limits the role of women in leadership is when it is claimed that women were part of detachments who was charged for washing, cleaning, cooking and for entertainment as wives, concubines or worker which was the essential requirement of troops.

### **Global Perspective**

Nations across world have adopted different decision to recruit women into the armed forces which can be traced back to the beginning of this century in European history where shortage of manpower during World Wars forced nations to include women to work as support unit of frontier forces. Women were generally inducted in large numbers into the supporting arms like ordinance factory workers, nurses, doctors, etc<sup>4</sup>.

### **United States**

The United States is often credited as pioneer and a trend-setter for other nations in regards to induction of women in the services. US have sent in their women troops for participating in Iraq operations in large numbers as support functions since they are forbidden to be placed in direct ground combat with enemy. US took important steps under President Clinton's where women were permitted to join as combat aircraft pilots<sup>5</sup>.

### **Israel**

Israel has made it equal for both women (as well as men) to join the armed force as part of its conscription policy but are confined to technical and administrative posts which can help in release men for active duty and not in active combat role, women even become instructors as well.

### **Britain**

Britain gave recognition to women in their Women's Auxiliary Service and kept excluded from the frontline duties that might require battling enemy at close quarters.

### **Canada**

Canadian women were initially considered suitable only for nursing duties but during the recent past are permitted in all corps and can rise upto senior decision-making officers after their recruitment drive as SWINTER (Service Women In Non Traditional Environmental Roles)

### **Bulgaria**

Bulgarian Army appointed women to professional military service in the Armed Forces on appointments with equal training standards and equal professional rights as men.

### **Some Other Countries**

In Australian Armed forces women are still not allowed in the combat roles, similar case is observed in Russia the erstwhile Soviet Union, Yugoslavia and Vietnam included women participation in combat role whereas other countries women is generally allotted nursing, communications and logistic support functions. Slovenia stands little different from all where after its independence in 1971 it inducted women in its armed forces soon.

Canada, Australia, and Denmark are among most liberal nations in including women in their Armed Forces even for combat roles. Turkey was among first few Islamic country who got women inducted in its regular Armed Forces other Muslim nations like Saudi Arabia approved the role of women in the Saudi Armed Forces which was followed by United Arab Emirates. President Saddam Hussain during Iran-Iraq war recruited about quarter million women into their women wing of military to strengthen loyalty later claiming of being most liberated in the Muslim world.

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<sup>4</sup> See <https://www.washingtonpost.com/news/worldviews/wp/2013/01/25/map-which-countries-allow-women-in-front-line-combat-roles/?arc404=true>

<sup>5</sup> See Anthony King (2013) Women in Combat, The RUSI Journal, 158:1, 4-11, DOI: 10.1080/03071847.2013.774634

China after long difference granted equality to women by promoting in women's militia to provide armed support to political leadership against any aggression.

### **Domestic Scene**

Traditionally Indian women have been depicted as one who needs to be with someone (on male members of the family from birth to death) for her dependency. The male could be the father, husband or son at each stage of her life which made it a patriarchal society where the system forced her to believe that there is no workstation for her outside her home.

While the success of a man is expected to be success of his wife or often termed as behind every successful man there is a woman therefore referring women as supporting arm and not on direct combat. However, the resemblance of power, grace, dedication, hard work and brilliance has been portrayed in form of female Goddess, women over the time has been successful in all fields and even during contribution for freedom struggle. During the freedom struggle, both men and women took part which also was seen to revolve over the time as from support staff to Rani of Jhansi Brigade of Indian National Army (INA) was formed on 9 Sep 1943 in Singapore under Dr. Capt Lakshmi Swaminathan Sehgal<sup>6</sup>, this brigade was specialised in what considered as modern day jungle warfare as well showing expertise in Malay region

The society is found to be decisive factor in deciding role and recruitment of women in armed forces. There are lots of roles that can be played equally or sometimes better by women in the Armed forces, while the first batch of women officers got commissioned in the Indian Army in 1993 opening entry as regular officers in branches of education, logistics, law, engineering and executive cadres. The entry although was turning point but had a long struggle still as they were not given permission commission expect in education and law branch after the Supreme Court ruling making the two genders receive setback to their working efficiency as well as interaction between them

It was seen that many gentlemen officers could not receive commands or treat their female counterparts at par with themselves same was found with their subordinate who were men and was experienced in seeing women play only traditional roles, this rising of women in the male dominated bastions where men had to be extra courteous and women had to focus on making their own makeshift arrangements to fit their needs within units or battalions.

Contemporary debate on employability of women in the Indian Army

Women in the Indian Army serve as Short Service Commissioned (SSC) officers which mean that they can serve in the armed forces for a maximum period ranging from 10-14 years and the debate raises that one side claims that women are equally capable of men to perform all job, whereas the other side claims that women are not physically and psychologically fit to perform the job. This debate after court's judgement to allow Permanent Commission to women has made all the three services to think on the future role of women in Indian Armed Forces.

Presently women officers are getting Commissioned into the branch and Services of non combat i.e. Army Service Corps, Army Ordnance Corps, Electronics and Mechanical Engineers, Engineers, Army Education Corps, Judge Advocate General Branch, Signals, Intelligence and Army Air Defence whereas Permanent Commission to women officers in Judge Advocate General Branch and Army Education Corps of the Army.

The deployment of women in combat has been a debate mostly pointed to alleged physical and mental differences of the two sexes citing the effect of the presence of the opposite sex on the battlefield also on the physical differences between two genders as to many senior officers women are not ready to be faced as Prisoners Of War<sup>7</sup>. The woman officer points that all inducted women officers do not undergo for combat duty and with increasing dependency on technology women officers feel they can excel in domains like meteorology, weapons development, cryptography, software development, ordinance, navigation.

Indian armed forces

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<sup>6</sup> See <https://www.thehindu.com/news/national/captain-lakshmi-sahgal-1914-2012-a-life-of-struggle/article3672666.ece>

<sup>7</sup> See <https://www.nytimes.com/1992/06/29/us/female-pow-is-abused-kindling-debate.html>

Indian Army started recruiting women officers in 1993 for its various arms and services excepting that branches not involving in direct combat role, initially they were given the option of Short Service Commission (SSC) this type of commission is of short term tenure offered to candidates selected to join the Indian Army as officers (both men or women) with a contractual tenure of 5 years that went extendable to 10 years and further to 14 years depending upon performance.

In 2008, the then government granted extension of Permanent Commission to women in two branches — Army Education Corps and Judge Advocate General whereas for others service tenure is of 10 years after which they have three options which can be to either opt for Permanent Commission where eligible, to opt out of service or to opt for an extension of 4 years. The officer can quit service anytime during the extension of tenure.

This short service brings in issues related to their promotion to higher ranks and their pension after this tenure which is a financial effect on their career as they are not Permanent Commissioned officers. The women officers feel of being still deprived from equality in employability, HR policies, promotion prospects and career opportunities even after putting in their best efforts to move shoulder to shoulder with their male counterparts instead affecting their morale and bring down the satisfaction levels besides the environment is not yet fully prepared accepting women as comrades in the service. The increasingly changing nature of battlefield scenario there is a need to evaluate the present eligibility criteria for induction of women officers in the armed forces as the future cyber war might not need to be fought in physical instead through information which will need a more proven dedication like women.

Women who are considered to be more skilled in management can make in good contribution to multiple areas which if not on direct combat as whenever a team goes on for combat role there is a team supporting from the base which can be easily handed to them overcoming debates that had more to do with traditional beliefs, ideologies and safety of the women. Many do question the joining of women in armed forces which has a life full of tough and rigid schedule forgetting that the pride of serving one's motherland is same for both men and women.

The decisions should be taken only after careful consideration as there is a lot at stake and if analysed then the induction of women into the Indian Army has been a successful experiment till now with due credit to both women as well as the institution. But to ensure that future experiments are equally successful a measure of foresight needs to be calculated considering all factors. Case studies from the countries who have recruited women in their armed forces need to be studied as many advanced countries have not inducted women in active combat duties units as every nation tries to ensure that women are not exposed to the risk of capture by the adversary.

While the social and cultural traditions might differ from country to country but the aim to ensure respect to women is kept on priority therefore there is an increasing need to look at the existing career opportunities for women commissioned in Indian Army and to be reviewed keeping in mind of future warfare which is more to be based on technology needing in highly skilled and focused team. The existing policies of 14 years tenure of service for women officers has posed serious limiting effect on their career as they reach into halt while they are in their early or mid-thirties years of age resulting in women often choosing the service as a job opportunity and not a dedicated career option.

The limited service span and amount of restrictions placed on their current role women stands to have a double disadvantage as they do not have the experience necessary to attain higher ranks and as they are kept away from operational roles, they miss out on important leadership related to operational experience that stands crucial for a command making it low representation at the decision making levels. These also creates in depression and a sense of grief as even after giving the organization the best years of one's life do not get opportunity to continue further makes them feel low when compared to male batchmate who both had same training and experience during service. Women officers who upon retirement are not eligible for pension have to again start looking for job to meet their ends often finds it difficult to cope up with private establishment as the discipline and way of working in an uniformed force and corporate firm is different which can be visible with their satisfaction level during the time of Commissioning and the time of their retirement from service.

## **CONCLUSION**

The women officers were first inducted under the Women Special Entry Scheme (WSES) introduced in 1993 under which the women officers have been inducted in the Indian Army in the various non combat services including Army Service Corps (ASC), Army Ordnance Corps (AOC), Army Education Corps (AEC), 17 Corps of Electronics

and Mechanical Engineers (EME), Corps of Engineers (Engrs), Corps of Signals (Sigs), Intelligence (Int), Judge Advocate General Branch (JAG), Army Air Defence (AAD).

At present the women officers in these branches are permitted to serve for initial 10 years and extendable to 14 years tenure and . Women officers in the Indian Army are not permitted to serve beyond the present contractual tenure of 14 years. The Indian Army has offered Permanent Commission to its women officers only in AEC and JAG branches while for rest they have to quit after completion of 14 years.

The hi-tech future wars that are to be fought by Indian Army cannot be made dependant on exclusive male recruits as the force is expanding that includes moving into cyberspace for cyber and electronic warfare it is now time to include women into operational roles as more and more women are becoming engineers and other technical graduates they need to be allowed for nation's security as defence still remains a key factor in the development of India. There is a need to consider about career and service of women officers from now as the bureaucracy might delay and push back the development that the country is aiming where both genders must collaborate together to strengthen the defence of nation. The third gender which is not yet considered to be made part of armed forces has also expressed their willingness to serve the nation and if they are able to pass all exams then there will be similar hurdle appearing that is why it has now become necessary to consider the role of women in armed forces



## EXPLORING THE IMPACT OF SOCIAL MEDIA ON SOCIAL CAPITAL AND WELL-BEING: A SOCIOLOGICAL PERSPECTIVE

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### ABSTRACT

*This research paper aims to investigate the influence of social media on social capital and well-being from a sociological perspective. With the widespread adoption of social media platforms in contemporary society, understanding their implications on individuals' social connections and overall well-being is of most importance. By examining existing literature and conducting empirical research, this paper seeks to shed light on the complex relationship between social media usage, social capital formation, and subjective well-being. The findings will contribute to the sociological understanding of the social consequences of social media and provide insights for policymakers, practitioners, and individuals alike.*

**Keywords:** *social media, social capital, well-being, sociological perspective, social connections, subjective well-being.*

### 1. INTRODUCTION

In recent years, social media platforms have become integral parts of our daily lives, transforming the way we connect, communicate, and share information. From Facebook, Twitter to Instagram and Snapchat, these platforms have revolutionized the way we interact with others and consume content. However, alongside their rapid rise in popularity, questions have emerged regarding the impact of social media on social capital and well-being. Social capital refers to the resources embedded within social networks, including trust, reciprocity, and social support. It plays a crucial role in fostering cooperation, collective action, and community development. Well-being, on the other hand, encompasses an individual's physical, emotional, and psychological state of being. It is influenced by various factors, including social relationships, self-esteem, and life satisfaction.

This sociological perspective aims to explore the complex relationship between social media, social capital, and well-being. Sociologists are interested in understanding how these digital platforms affect social interactions, community engagement, and individual happiness. By examining the ways in which social media both facilitates and challenges traditional forms of social capital, we can gain insights into its broader societal implications. One aspect to consider is the potential of social media to enhance social capital. These platforms provide new opportunities for individuals to connect with others, irrespective of geographic or temporal constraints. Online communities and interest groups allow people to find like-minded individuals, fostering a sense of belonging and social support. Additionally, social media can serve as a platform for collective action and mobilization, enabling individuals to organize and advocate for social change.

However, it is also essential to recognize the potential pitfalls associated with social media use. Critics argue that social media can contribute to the erosion of social capital and well-being. Excessive time spent on these platforms may replace face-to-face interactions, weakening the depth and quality of relationships. Moreover, the constant exposure to idealized portrayals on social media can lead to feelings of inadequacy, comparison, and decreased self-esteem, ultimately impacting overall well-being. To fully understand the impact of social media on social capital and well-being, it is crucial to consider diverse sociological perspectives and methodologies. Qualitative research can provide in-depth insights into individuals' experiences, examining how social media shapes their social networks and emotional well-being. Quantitative studies, on the other hand, can help identify broader patterns and trends, exploring correlations between social media use, social capital indicators, and well-being measures.

By critically examining the intersection of social media, social capital, and well-being from a sociological perspective, we can contribute to the ongoing discourse surrounding the effects of digital technologies on society. This exploration will shed light on the potential benefits and drawbacks of social media use, allowing individuals, communities, and policymakers to make informed decisions about their engagement with these platforms. In the following sections, we will delve deeper into specific aspects of social media's impact on social capital and well-



being, drawing on relevant sociological theories, empirical studies, and real-world examples. Through this exploration, we hope to provide a comprehensive understanding of the complex dynamics at play and encourage further research and discussion in this vital area of study.

#### **RESEARCH OBJECTIVES:**

1. To examine the relationship between social media usage and social capital from a sociological perspective. This objective aims to understand how social media platforms influence individuals' social connections, community involvement, and trust in others.
2. To investigate the impact of social media on well-being, taking into account various dimensions such as psychological, emotional, and social well-being. This objective seeks to understand how social media use affects individuals' overall satisfaction with life, mental health, and social relationships.
3. To identify the mechanisms through which social media influences social capital and well-being. This objective aims to explore the mediating factors, such as online social support, virtual communities, and information sharing that link social media use to social capital and well-being outcomes.
4. To examine the role of different social media platforms and usage patterns in shaping social capital and well-being. This objective aims to understand the differential effects of platforms (e.g., Facebook, Twitter, Instagram) and explore how the frequency, intensity, and purpose of social media use contribute to social capital formation and well-being outcomes.
5. To explore the potential moderating factors that may influence the relationship between social media, social capital, and well-being. This objective seeks to investigate individual characteristics (e.g., age, gender, socioeconomic status), contextual factors (e.g., cultural norms, social support systems), and platform features (e.g., privacy settings, algorithmic content curation) that may influence the impact of social media on social capital and well-being.
6. To provide recommendations and implications for individuals, policymakers, and social media platforms to promote positive outcomes in terms of social capital and well-being. This objective aims to translate research findings into actionable strategies that can help individuals harness the benefits of social media while mitigating potential negative consequences.

By addressing these research objectives, this study aims to contribute to the growing body of sociological research on social media's impact on social capital and well-being, providing valuable insights for individuals, communities, and policymakers in navigating the digital landscape.

#### **RESEARCH QUESTIONS:**

1. How does social media usage affect the formation and maintenance of social capital?
2. What are the key factors that influence the relationship between social media and social capital?
3. How does social media usage influence individual well-being and mental health outcomes?
4. Are there differences in the impact of social media on social capital and well-being across different demographic groups (e.g., age, gender, socioeconomic status)?
5. To what extent does social media usage affect social trust and civic engagement?
6. What are the mechanisms through which social media influences social capital and well-being?
7. How do different types of social media platforms (e.g., Facebook, Twitter, Instagram) influence social capital and well-being differently?
8. How do online social networks formed through social media compare to offline social networks in terms of social capital and well-being?
9. What are the potential positive and negative consequences of social media use on social capital and well-being?
10. How do cultural factors and societal norms shape the impact of social media on social capital and well-being?

These research questions aim to explore the relationship between social media use and social capital as well as individual well-being from a sociological perspective. Conducting research in this area can provide valuable insights into the impact of social media on individuals and society, and inform the development of strategies to maximize the positive outcomes while mitigating potential negative effects.

**Significance of the Study:** The study exploring the impact of social media on social capital and well-being from a sociological perspective holds significant importance for several reasons.

**Let's discuss its significance in detail:**

- 1. Understanding the role of social media:** Social media platforms have become integral parts of our daily lives, shaping our social interactions and influencing our well-being. By studying the impact of social media on social capital and well-being, this research sheds light on the dynamics of these platforms and helps us comprehend their role in contemporary society.
- 2. Social capital and its relevance:** Social capital refers to the resources, connections, and social networks individuals possess that can facilitate their social integration, trust, and cooperation within communities. By examining how social media affects social capital, the study contributes to our understanding of how online interactions can impact the formation, maintenance, and erosion of social capital, both at the individual and societal levels.
- 3. Well-being in the digital age:** With the pervasive use of social media, it becomes essential to evaluate its influence on well-being. The study investigates how social media usage affects individuals' psychological, emotional, and social well-being. By highlighting the potential benefits and drawbacks of social media engagement, it offers valuable insights into maintaining or improving well-being in the digital age.
- 4. Sociological perspective:** Adopting a sociological lens allows researchers to analyze social media phenomena within broader social structures, cultural contexts, and power dynamics. This perspective helps uncover the underlying social processes that shape and are influenced by social media use, providing a more comprehensive understanding of its impact on social capital and well-being.
- 5. Policy and intervention implications:** Findings from this study can inform policymakers, organizations, and individuals about the potential consequences of social media use. It can guide the development of policies and interventions aimed at maximizing the benefits and mitigating the negative effects of social media on social capital and well-being. For example, it may highlight the need for digital literacy programs or guidelines for responsible social media usage.
- 6. Advancing sociological research:** By delving into the complex relationship between social media, social capital, and well-being, this study contributes to the existing sociological literature. It expands our knowledge base, offering theoretical frameworks, empirical evidence, and methodological approaches that can inspire future research and deeper exploration of the topic.

In summary, the significance of the study exploring the impact of social media on social capital and well-being from a sociological perspective lies in its contribution to understanding the dynamics of social media, its effects on social capital and well-being, and its implications for individuals and society. By addressing these aspects, the study helps us navigate the complexities of social media use and develop strategies to harness its potential for positive social outcomes.

**RESEARCH METHODOLOGY:**

Exploring the impact of social media on social capital and well-being from a sociological perspective requires a comprehensive methodology that incorporates both quantitative and qualitative research methods. Here's a suggested methodology for conducting such a study:

- 1. Define research objectives:** Clearly articulate the specific research objectives and questions you aim to answer regarding the impact of social media on social capital and well-being. For example, you may want to investigate how social media usage affects the quality and quantity of social connections, community involvement, and individual well-being.

2. **Literature review:** Conduct a thorough review of existing literature on social media, social capital, and well-being. This will help you identify relevant theories, frameworks, and previous research findings that will inform your study.
3. **Research design:** Determine the most appropriate research design for your study. A mixed-methods approach is often valuable for examining complex social phenomena. Consider combining quantitative surveys and qualitative interviews or focus groups to obtain a comprehensive understanding of the topic.
4. **Sampling:** Define your target population and select a representative sample. Consider factors such as age, gender, socioeconomic status, and social media usage patterns. Ensure your sample size is statistically significant to generalize findings to the larger population.
5. **Quantitative data collection:** Develop a survey questionnaire to collect quantitative data. Include questions that measure social media usage patterns, social capital indicators (e.g., trust, reciprocity, social networks), and well-being indicators (e.g., life satisfaction, mental health). Use established scales and measures wherever possible. Administer the survey to your selected sample, either online or in person.
6. **Qualitative data collection:** Conduct qualitative interviews or focus groups to gain in-depth insights into participants' experiences and perceptions. Use a semi-structured interview guide with open-ended questions to allow participants to share their thoughts on social media's impact on their social capital and well-being. Ensure a diverse range of participants to capture a broad spectrum of perspectives.
7. **Data analysis:** Analyze the quantitative data using appropriate statistical techniques such as regression analysis, correlation analysis, or structural equation modeling. Explore the relationships between social media usage, social capital, and well-being indicators. Analyze the qualitative data using thematic analysis or content analysis to identify recurring themes and patterns in participants' responses.
8. **Triangulation:** Compare and integrate the quantitative and qualitative findings to gain a more comprehensive understanding of the topic. Look for convergence or divergence between the two sets of data to validate and enrich your findings.
9. **Ethical considerations:** Ensure ethical standards are met throughout the research process. Obtain informed consent from participants, protect their privacy and confidentiality, and adhere to relevant ethical guidelines.
10. **Interpretation and discussion of results:** Interpret the findings within the context of existing theories and research. Discuss the implications of the results for social theory, policy, and practice. Consider the limitations of your study and suggest avenues for future research.
11. **Report and dissemination:** Prepare a detailed research report that includes an executive summary, introduction, methodology, results, discussion, and conclusion. Present your findings at academic conferences, publish in relevant journals, and engage in public outreach to maximize the impact of your research.

By following this methodology, we will be able to explore the impact of social media on social capital and well-being from a sociological perspective in a rigorous and systematic manner.

## DISCUSSION:

The advent of social media has revolutionized the way individuals communicate, interact, and engage with each other. This rapid transformation has sparked considerable interest among sociologists who seek to understand the impact of social media on various aspects of society, including social capital and well-being. This theoretical framework aims to provide a sociological perspective on exploring the relationship between social media, social capital, and well-being.

1. **Social Media:** Social media refers to online platforms and applications that enable users to create and share content, connect with others, and participate in virtual communities. Examples of popular social media platforms include Facebook, Twitter, Instagram, and LinkedIn. Sociologists study social media as a key component of modern social life, considering its influence on social interactions, relationships, and societal structures.
2. **Social Capital:** Social capital encompasses the resources embedded within social networks, including norms, trust, and social connections that individuals can access and utilize for various purposes. Sociologists analyze

social capital to understand how social relationships and networks contribute to individual and collective well-being. It can be categorized into three dimensions: bonding social capital (strong ties within a specific group), bridging social capital (weaker ties across diverse groups), and linking social capital (connections between different social strata).

3. **Well-being:** Well-being encompasses the overall state of an individual's physical, mental, and social health and satisfaction with life. Sociologists study well-being to understand how social factors and interactions influence individuals' subjective experiences and quality of life. It involves evaluating dimensions such as happiness, life satisfaction, self-esteem, and psychological and emotional well-being.
4. **Social Network Theory:** This perspective focuses on the structure and dynamics of social relationships. It examines how social media platforms reshape the nature and extent of social ties, both online and offline. Scholars investigate how the size, diversity, and strength of social networks on social media impact the accumulation of social capital and subsequently influence well-being outcomes.
5. **Social Capital Theory:** This theoretical framework examines how social capital contributes to individual and societal well-being. Sociologists explore how social media platforms facilitate the formation, maintenance, and expansion of social networks, enabling the accumulation of social capital. They also examine how individuals' access to different forms of social capital on social media influences their well-being.
6. **Symbolic Interactionism:** This perspective focuses on the meanings, symbols, and interactions involved in social processes. Scholars using this framework explore how individuals use social media to construct and maintain social identities, present themselves to others, and engage in impression management. They analyze how these processes shape social interactions, network formation, and the accumulation of social capital, ultimately influencing well-being.
7. **Mediating and Moderating Factors:** To comprehensively understand the impact of social media on social capital and well-being, it is crucial to consider mediating and moderating factors. Mediating factors may include psychological mechanisms (e.g., self-esteem, loneliness, social comparison) or behavioral patterns (e.g., online engagement, information sharing) that explain the relationship between social media use, social capital, and well-being. Moderating factors can include individual characteristics (e.g., age, gender, and socioeconomic status), cultural contexts, and platform-specific features that influence the strength and direction of these relationships.

## CONCLUSION

By adopting a sociological perspective, this theoretical framework provides a foundation for exploring the complex relationship between social media, social capital, and well-being. It underscores the importance of understanding how social media platforms shape social interactions, network structures, and the accumulation of social capital, and how these factors ultimately impact individuals' well-being. Sociological research in this domain can contribute to developing a nuanced understanding of the transformative effects of social.

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