



## INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION AND MANAGEMENT

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## CHALLENGES AND OPPORTUNITIES OF TECHNOLOGY TRANSFER MANAGEMENT

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### ABSTRACT

*Today, technology has become so rich that many of the developing countries can't even afford to have all the facilities, It is admitted that these changes and takeovers affected economical, industrial, security, technical, cultural aspects of many countries in the world-wide age, only by gaining technological capabilities, power sources for competing with other countries could be gained. Therefore, to expand economical development of a country, it is the politicians and bureaucracy developing countries, duty to look after their respective countries economic problems by keeping in mind their technological gap with the industrial world which is a very dangerous matter and by use of their knowledge about all related policies; they should provide scope of technology for their country. In this paper, the meaning of technology transfer process in different stages of cycle of technology life, facilitating catch up, and technology diffusion, management of technology, spillover of huge political process of technology transfer and necessities it at national level of developing countries, have been discussed.*

### KEYWORDS

Management of Technology, Technology Transfer, Technology Diffusion, Catch- Up Method, Technology Spin-off.

### INTRODUCTION

In the past, the availability and usage of raw materials, workmanship, transportation and sources were more or less the compete power of countries, though still remain so, but today, developed countries get advantages from spread of knowledge to make advanced technology which helps them in competing with others, For instance the national consultative of technology and science in America published an article regarding "Attention to technology at national level" which says progresses in technology is one of the important facts which determines economic growth of countries. About half of the economic growth of the United States in a long period of time over past 50 years is because of technology.

According to many politicians, technology transfer could be a suitable solution to decrease distances between developed countries and developing countries. There have been various methods in technology transfer which had been experienced and each must be studied. With respect to all of valuable experiences in terms of technology transfer to countries, there are many challenges in field of technology transfer. In this paper, we study some of these challenges. This is a process in an organization where in that, developed (Asia and pacific center for transfer of technology (APCTT), 1986). With due attention to the ever-increasing role of new technology in improvement of quality, and providing higher value in production on one part, and converting the investigated thoughts to assured economic ways to the other part, there won't be any doubt that the only way to make amends for technical regarding of a country is to use other's successful experiences in new arenas. If these experiences and knowledge of techniques are used correctly, then the real technology transmission is done successfully. In the other words, technology transmission is a phenomenon in which a particular technology is used by other parties for the same purpose or other purposes. It goes through different stages such as: recognition, assumption, acquisition, compatibility and at last development of technology is considered.

### METHODS OF TECHNOLOGY TRANSFER

In the m field of management of technology, the terminology, technology transfer, is sometimes used as, technologic co- operation, which seems to be more comprehensive and covers wider areas. Recently there was lot attention to joint (or-co- operated) technology. Further, from the management point of view, how to organize technology co- operation will be discussed and studied.

Technology co- operation can be classified according to technology life time stages, which are (Caliano, R, chiesia, V., Manizni,R.,200)

#### A. RESEARCHES CO- OPERATIONS

In this type the result of research can't be explained perfectly in terms of priority and that is due to its concentration on discovery activities. Therefore the last result of the research is unknown. The activities are usually very risk and it is probable that the research project fails. In research co- operation one of the current motives in technologic co- operation is to limit and to decrease the risk. The expenses of research are high and difficult to provide, especially if the companies are SMEs. Technology co- operation provides an opportunity to allocate suitable resource with the help of several co- operating companies. Other motives could be the following.

- Access to different fields of technology.
- Development or Deeping knowledge in a technology field and improving creativity by helping the connecting of people to different cultures.
- Universities and research and creative

Companies who are they are experts in special technology fields and competitors in similar activities, can take part in these co operations.

#### B. TECHNOLOGY CO- OPERATIONS EXPANSION

In these co- operations, matter of work is known and that is because, first a new product has to come into existence. For instance it is very common in pharmaceutical industry; big institutions give- over clinical activities to other companies. Expanding co- operations usually combined with high economical and commercial risks. New products might not be sold very well or might not function well for the user. Technologic risk (risk in developing project's faillire) is low for example in electronic and dispatches industry; the risk is about only one- third or one- fourth of the development at phase The most important aim of these kinds of co- operations is time reduction as well as decrease of related expenditures in development by help of subscribing sources and wealth; companies will try to find partners due to heavy amount of development expenditure so that the amount reduces. In these co- operations, focus on providers has an important role especially if the quality and output of materials, parts and machines which produces, be extremely important. For example, joint marketing for new products are very important. For instance several Italian weaving companies co- operations, because the end product is close to commercial stage, anyway, when the aim is to close to common standards for marketing, the competitors help each other.

#### C. MANUFACTURE AND PRODUCTION CO- OPERATIONS

Usually in this kind, the aim of co- operation has been explained for a short period of time and sometimes it is limited, but like producing a product or a particular part, the timing is according to area of co- operations in long time or short time. Financial and technologic risk is lower, but instead, the market risk is higher. Sometimes when the demand for a product is unknown, co- operation risk in manufacturing and producing will increase. The most important motives are:

- \* Achieving a suitable scale of production in small institutions.
- \* Providing harmony in competences and suitability for producing complex products.
- \* To give- over the activities, outside the institution.

Sometimes producers or contractors co-operate with each other to reach a higher degree of integration of operational and technological. Also companies active in different parts of industries, to complete their technology or economic exploitations from marketing, co-operate with each other. Competitors also may co-operate with each other to achieve suitable scale of production or to use limited sources.

#### MACRO POLICIES OF TECHNOLOGY TRANSFER

1. Overall graph for technologies which supply particular needs of people.
2. Criteria of technology evaluation.
3. Latest technology
4. Middle technology
5. Old technology
6. Time

In this section macro policies of technology transfer will be explained which includes.

1. Catch-up method,
2. Technology diffusion,
3. Management of technology
4. Technology spillover

#### 1. CATCH-UP METHOD

Though developing countries are behind developed countries in terms of technology, they can use their advantages of being new, To develop their own technology. One of these advantages is to learn from other sources and import technology. New emerging countries can learn others experiences. Many of the useful technologies are available with good prices; therefore there is on need of producing them again. (A famous slang says that there is no need to create a wheel which is already created). Emerging countries should also pay attention to different aspects of bringing up a new technology. To buy or have mature technologies, lesser money and risk is needed.

The other policy to use could be jump (Technological Leapfrogging). These countries can jump from middle developing technology stage, by assisting needs. Here the strategy of producing technology has been meant.

#### MODELS (EXAMPLE) FOR CATCH-UP

Study of six different industries in South Korea, introduce some catch-up model's (short cut models). Though they are not the only models, but the results of these projects are very useful and instructive. These are the three models (Lee K, Lim c 2001).

#### A. CATCH-UP (SHORT-CUT) VIA FOLLOWING WAY

Catch-up in following way means the new companies continue the same way as other companies used to do, but these new companies will move on faster in time, Compared to the old companies.

#### B. CATCH-UP VIA JUMP IN THE WAY

Second model is catch-up via jump in the way which means, new companies, after passing half the way, will move on from some of the stages.

#### C. CATCH-UP BY CREATING NEW WAYS

This is the third model: Here they create new ways which means the new companies will do deep research on their expansion of technology. This happens only when these new companies follow some other companies, way and achieves a new stage and change their direction to a new direction and then create their own new way. Therefore among these three models, the first model is more traditional. While other the two models are new to techno technology policies. Although these models are not a fixed phenomenon, they will be used for mixed models actions. For instance observed in the study, electronic industry machine technology and also personal computers (PC), they used the 'following model' Technological Leapfrogging had been used for car and vehicle industry and 'creating way' had been used in phone industry.

#### 2. TECHNOLOGY DIFFUSION

Putting difference between technology transfer and technology diffusion is important. 'Technology transfer' is the first step in 'technology diffusion' which means, producer transfer the knowledge to receivers. While 'technology diffusion' is where new crated knowledge will be collected and will be spread between numerous interactions by leaning from each other.

'Technology transfer' will just expanse information and knowledge, while 'technology diffusion' will expand and will change the technology's place. Therefore 'technology transfers' will be explained as a part of 'technology diffusion' which is a wider and more complicated subject than 'technology transfer'.

#### POLICIES OF TECHNOLOGY DIFFUSION

Spread of technology is very complicated and the varieties are more. That is why it can't be classified with a particular standard. In fact it is defined technology transfer as part of technology diffusion process; accordingly by adapting a systematic approach can clarify the system of Technology diffusion policies on the basis goals, functions and method of doing the operation (Park Y-T, 1999).

#### A. CLASSIFICATION ACCORDING TO AIMS

Aim, is first and most important standard to study and analyze policy. Direction and amount of movement's interference will be specified with aim. It also covers economical and social needs. Policies of technology diffusion will be classified into four groups.

1. **Axis technology aims:** this program or policy helps a particular technology spread to an industry or place or institution.
2. **Axis organization aims:** this program or policy settles increase of technique powers of a special organ or small institutions.
3. **Axis industries aims:** this program helps strengthen and conserves special industries to compete
4. **Axis area aims:** this program helps technical power of a special area to increase.

#### B. CLASSIFICATION ACCORDING TO OUTPUTS

Policies of spread of technology vary in terms of outputs. These programs can be classified into five groups.

1. **PRODUCING OUTPUTS:** Universities and government research centers and personal institutions join together to create new technology. In this case production and diffusion of technology happens together at the same time.
2. **TRANSFORMING OUTPUT:** Technology's wealth of public resources will be guided (moved on to) to personal institutions for spin-off of technology.
3. **COMMERCIAL OUTPUT:** Public companies help personal institutions, so that the R&D results turn to commercial productions. Therefore publish causes used technology to improve from ability of attracting institutions.
4. **CONSULTING OUTPUT:** Technical and managerial problems in personal institutions will be solved by general company so that imported technologies get attracted easily.
5. **EMIGRATION OUTPUT:** Human recourses get exchanged between personal institutions. This causes the abilities which are hidden in each person to increase and show up.

#### C. CLASSIFICATION ACCORDING TO WAYS OF ACCOMPLISHMENT

Ways of execution of technology diffusion is nothing but a relation among partners. Methods of spread programs can be studied and analyzed in different ways. Regarding that, five models are introduced.

1. **PAIR WISE METHOD:** usually two or more couple of partners work together, either in hierarchical order or partners work together, either in hierarchal order or horizontally; therefore spread of technology happens by direct relations between partners.
2. **INTERMEDIATE METHODS:** in this method, a third partner will act as an agent or intermediary between other partners for purpose of spreading technology, in fact it acts like catalos in between.

**3. MIXED METHOD:** here, numbers of partners will be like consortium which might be real or metaphorical (fake). Therefore spread of technology happens to be co-operation of partners together.

**4. MOVING METHOD:** an external partner moves between other partners or exchanges human resources among them, until the hidden technology or the technique services in the human mind spreads out smoothly.

**5. METAPHORICAL METHOD:** Several partners join together indirectly through electronic channels. Each one of them can use technical services or shared information personally.

### 3. MANAGEMENT OF TECHNOLOGY

Management of Technology as: "an interdisciplinary area relating to designing, developing and technological abilities to form and fulfill strategic and operational goals on all organizations" "Technology management is a specialized interdisciplinary area incorporates sciences, engineering, and knowledge and management skills.

It focuses on technology known as the main factor of wealth creation. Certainly, wealth creation is not money. It depends on elements like knowledge improvement, intellectual property. Effective productivity of resources, environment preservation etc which affect standard development and quality of life. Technology management includes accepting responsibility, creation, purchasing, dissemination and technology development, to help peoples' efforts and customers' needs, (Khalil, Tarek, 2000). The principal domain of management is technology is: How can we incorporate technology with strategic goals of organization? How can we develop technology more quickly? How can we evaluate technology with more effectiveness? How can we better transfer technology? How can we increase longevity and decrease development of new production? How can we manage inter organizational technology? How can we use professional effectiveness of technology as a progressive factor? (Khalil, Tarek, 2000).

### 4. TECHNOLOGY SPILLOVER

Technology spillover means, a technology which is gained due to presence of other multinational companies in a host country. Usually, these presences are happening by attracting foreign investment through these companies. Direct spillover happens only if companies of different nationalities which have their own technology start training programs to provide human power needed; then by authorizing know-how needed for production and necessary software, starts working. It will cause human technical power increases in the host country. In exchange for these personnel to other similar institutes, the experiences also would get transferred. This is the most important matter for these companies in the host country. Direct spillover could happen in other ways like expansion of secondary contractor's in host country for purpose of providing multinational companies needs. Anyway, the company which owns technology provides scope of increase in technical experiences for local companies in different transactions.

In indirect spillover, Presence of multinational companies and presence of their productions in host country causes increase of struggle in local companies. For instance presence of foreign vehicles cause's people's expectations to go higher and automatically more force will be on local companies to improve themselves and their products. Technology spillover does not happen on its own; the companies which own foreign technology don't like that or try their best to stop it. Rather than what government does in protecting technology spillover, technical ability level of local companies also is a fact that affects these processes. On the other hand, when distance between technical abilities of local companies and companies with own technology be in such a way that local companies are not able to keep themselves up with natural process and competitive chain of producers, then the company will need to provide for itself its needs from outside the host country which causes weakness in local companies if the host country does not correct itself (Radosevic. S.1999). Therefore, in these situations, not only multinational companies won't spillover in technology, but also spoiling abilities of local companies and local marketing, it causes relapse in the host country.

## CONCLUSION

Just as we saw, technology transfer has different meanings at different levels of technology development (research co-operations, development and production).

Also it is understood now that technology diffusion is considered a predetermined condition for affecting technology transfer process at national level. Though technology transfer is the most important aim of economic institutional managers in most developed countries, but technology diffusion (or in the other words, spread of technology at national level) is the politicians sensation in developing countries.

Usually, governments get advantages of political improvement aiming to facilitate technology transfer process. It includes:

1- Technology diffusion. 2- Facilitating catch-ups (short-cuts). 3- Strengthening technology spillover.

Just as we saw, the accomplishment of any of the policies mentioned above depends on concerning of regards and duties which needs experts and managers, of these opinions of this realm. I trust this paper could have clarified the ambiguities of some different concerned technology transfer at the national level for developing countries.

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**DETERMINANTS OF MARKET ENTRY STRATEGY CHOICE OF INDIAN FIRMS ON GCC SOIL**

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**ABSTRACT**

*Today, international business comprises a large and growing portion of the world's total business. Lately, the Gulf Cooperation Council (GCC) which comprises of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates has been an active player in world trade. The GCC countries are moving ahead rapidly with their economic integration efforts and introducing measures for economic liberalization. The enormous growth and profit potentials in these markets and the desire to survive the onslaught of global competition has prompted an increasing number of Indian firms to develop strategies to enter and expand into GCC markets. However, while such a move can no doubt leap lucrative rewards, it can also be rather perilous. The present paper provides insight on the different factors that affect the market entry strategies of Indian firms when entering the GCC market. Gaining insights into the thought process of Indian firms marketing their products in GCC market will help to understand and devise an appropriate market entry strategy by firms planning to enter the GCC market.*

**KEYWORDS**

Firm Specific Resources, GCC market, Host Country Factors, Market Entry Strategy, Resource Based Framework.

**INTRODUCTION**

The Iron Curtain has disintegrated, offering a vast array of new marketing opportunities-albeit amid uncertainty. The international marketer is subject to new set of macro environmental factors, to different constraints, and to quite frequent conflicts resulting from different laws, cultures and societies. Thus, when a decision is taken by an Indian firm to internationalize and enter a lucrative market like GCC, an important and strategic concern will be about choosing the correct market entry method. An inappropriate entry mode may block opportunities and substantially limit the range of strategic options open to the firm. It may result in substantial financial losses to the firm including exit from the foreign market. For successful entry into GCC market, and to avail the immense opportunities available in GCC, it is imperative for an Indian firm to carefully assess the environment to analyze a host of factors and then decide on an appropriate strategy for achieving its objectives on GCC soil.

**RESOURCE BASED FRAMEWORK**

A number of theories and conceptual frameworks have been put forward outlining a company's decision to initiate the internationalization process. According to the Resource based theory, firms adopt strategies that their resources can support. The resource-based approach to entry mode choice incorporates the notion that a firm competes well in a setting in which there is a fit between the firm's resources and external opportunities. Resource based theory holds that the firm's success derives not only from market forces but also from the firm's capability in managing, responding to, and even manipulating the environment. This framework portrays appropriate entry mode as a function of the interplay of firm specific resources and strategic issues, home country factors, host country factors, nature of product and degree of control sought by the firm. The paper focuses on firm specific resources and strategic issues, and host country factors to determine the degree of control sought i.e. the Market Entry Strategy choice. Influence of the home country factors was held constant as the study involved firms only from India. Only manufactured goods and separable services were considered so that determinants of entry mode choice could be generalized. A literature review of external factors affecting market entry was conducted with the objectives of identifying candidate variables to include in our study.

**REVIEW OF LITERATURE**

The selection of an appropriate market entry strategy in a foreign market is one of the most important decisions to be taken by a firm. To facilitate the adoption of an appropriate entry mode, it is important to have models which are rooted in sound theories. A literature review of external factors affecting market entry was conducted with the objectives of identifying candidate variables to include in our study and developing a set of scale items which could be used to measure those variables. The need of the present study is further justified from the review of related literature given below.

Block Z. And Macmillan Ian C. (1994), conducted a research on market entry strategies for new corporate ventures. According to them, in addition to the usual components of strategy, the elements of strategic aggressiveness and focus must be added in light of their significance to the outcome of new product and new venture entries.

Douglas S.P and Craig C.S. (1995), suggested an approach to develop international market entry strategies for firms from emerging market economies.

Contractor F.J. and Kundu S.K.(1998), conducted a study to find out what determines an organizational mode .They combined the concepts from transaction costs theory ,agency theory, corporate knowledge and organizational capabilities theories and found out that the choice of entry mode is determined by both country or environmental variables as well as firm specific variables.

Sun H. (1999), conducted a study of the entry modes of MNC's into China from socio-economic perspectives.

Arora A. and Fosfuri A. (2000), conducted a research to find out the determinants of the choice between wholly owned subsidiary and technology licensing as a strategy for expansion abroad. They found that both cultural distance and the presence of other potential licensors favor the use of licensing as a market entry strategy abroad.

Osland G.E., Taylor C.R. and Zou S. (2001), conducted a study to examine what institutional arrangements are preferred and what factors affect the choice of foreign market entry mode of Japanese and U.S. firms. They found out that target market factors that are important to Japanese managers are political risk, investment risk, host government local content requirements and qualifications of local partners.

Koch A.J. (2001), conducted a study to examine the great variety of influences on the market entry mode selection (MEMS) process outcomes.

Eramilli M.K, Agarwal S. and Dev C.S. (2002), conducted a study which focussed on the choice between different types of non equity modes that service firms employ.

Pan Y. (2002), conducted a study to examine the impact of source country factors on the equity ownership in international joint ventures.

Mellahi K., Guermat C., Frynas G. and Al Bortamani H. (2003), conducted a study to examine the factors that influence foreign investors to engage in FDI. The study was conducted in one of the GCC countries, Oman.

Whitelack J. and Jobber D. (2004), conducted a study which examined the international market entry decision and the external factors that have an impact on this decision.

Bamford J., Ernst D. and Fubini D.G. (2004), conducted a research to understand the challenges of a Joint Venture launch. They studied the launch of 25 JV's across the globe in a range of industries.

Khanna T., Palepu K.G. and Sinha J. (2005), conducted a study on strategies that fit emerging markets.

Blamstermo A, Sharma D.D. and Sallis J. (2006), conducted a study to examine the relationship between foreign market entry modes and hard and soft service firms. The study investigates which foreign market entry modes service firms opt for, and if this is influenced by systematic differences between types of service industries.

Doherty A.M. (2007), conducted a study to examine the factors that motivate international retail companies to choose franchising as a method for entering international markets.

Cheng Y. M. (2008), conducted a study which relied on an extensive field analysis that focuses on a representative sample of international investment undertaken by Taiwanese SME's that invested in China, ASEAN, Japan, NAFTA and EU

Thus, a review of the literature shows that though several studies have been conducted to analyze different market entry strategies of firms in different international markets, yet no study has been conducted to devise market entry strategies for Indian firms in GCC countries. Hence, a study of past research undertaken by different scholars clearly indicates a research gap which needs to be fulfilled.

## OBJECTIVES OF STUDY

The overall objective of the study is to study the variables which affect the choice of market entry strategy, so that appropriate market entry strategies can be devised for marketing Indian products in GCC markets. To develop a holistic analysis of the stated research problem, following objectives have been developed for the study.

1. To study the significance of the different host country factors on the selection of market entry strategy for marketing Indian products in GCC markets.
2. To study the significance of the different firm specific resources and strategic issues on the selection of market entry strategy for marketing Indian products in GCC markets.
3. To conclude and recommend appropriate market entry strategies for marketing Indian products in GCC markets based on the above study.

## RESEARCH HYPOTHESIS

To statistically test the validity and applicability of the findings of the research survey with respect to the above stated research objectives, following hypotheses have been developed. These hypotheses are tested by the application of appropriate statistical tools to derive meaningful and relevant recommendations.

Hypothesis 1: M (rising levels of equity and control) will be negatively associated with var1 and var2, where

var1 = a competitive target market with similar and easily substitutable products.

var2 = presence of high legal restrictions in the host country.

Hypothesis 2: M (rising levels of equity and control) will be positively associated with var3, var4, var5, var6, var7, var 8, var9, var10, var11, var 12 and var13, Where,

var3 = a politically stable environment in the host country.

var4 = greater cultural and social similarity between the home and the host country.

var5 = lower investment risk in the host country.

var6 = high market potential in the host country.

var7 = higher level of development and economic welfare of the host country.

var8 = better infrastructure available in the host country.

var9 = greater firm size.

var10= greater international business experience of the firm.

var11 = firm with a proprietary technology that is a sustainable competitive advantage in the host country.

var12= an organizational culture of the firm which is a sustainable competitive advantage in the host country.

## METHODOLOGY

To study the association of market entry strategy, i.e. the level of equity ownership and overall control with different variables related to host country and firm specific resources, the dependent variable M (depicting the market entry strategy) is regarded as a polytomous measure depicting rising levels of equity ownership and overall control. The four market entry strategies (M) considered are: Exporting, Management Service Contract, Joint Venture and Wholly Owned Subsidiary.

Keeping in view the convenience and ease of collecting data, the Sultanate of Oman market was selected to make the present study truly representative of the entire GCC market. Firms for the study were selected by using convenience and judgement sampling and were pursuing one of the four market entry strategies being studied by the researcher. The primary data was collected using a questionnaire. The questionnaire was administered to the key decision maker relating to international markets in each of the firms in Oman. To arrive at pertinent analysis, the collected data was put to a planned statistical analysis using SPSS Statistics 17 package and Microsoft Excel 2007.

## RESULTS AND DISCUSSION

The findings of this study demonstrate that managers make entry mode choices based on considerations of host country factors and firm-specific resources that afford their firm competitive advantage in the target foreign market. The findings of our study also identified specific significant factors that should be taken into consideration while devising a particular market entry strategy.

## HOST COUNTRY FACTORS

Host country factors were found to be good predictors of market entry strategy. Relevant host country factors affecting market entry decision include competitive target market, political and legal environment, social and cultural similarity with home country, investment risk and market potential, level of development and economic welfare and infrastructure available in the host country. M (rising levels of equity and control) was found to be negatively associated with var1 and var2, where, var1 = a competitive target market with similar and easily substitutable products; var2 = presence of high legal restrictions in the host country. M( rising levels of equity and control) was found to be positively associated with var3, var4, var5, var6, var7and var 8, where, var3 = a politically stable environment in the host country; var4 = greater cultural and social similarity between the home and the host country; var5 = lower investment risk in the host country; var6 = high market potential in the host country; var7 = higher level of development and economic welfare of the host country; var8 = better infrastructure available in the host country.

To specify a range of dependent variables and sub variables for each market entry strategy, a statistical tool, Compare Means was used. Each of these variables from var1 to var8 was further represented by the following variables to arrive at the following conclusions about the factors which are significant for the choice of each market entry strategy.

var1 = a competitive target market with similar and easily substitutable products was represented by V2,V3,V4,V5 and V6, where V2= greater types and number of competitive products are available in the market; V3= competitor's market share, his coverage, and growth rate in host country; V4= the advantages and weaknesses of the competitors in the host country market(for e.g. uniqueness of competitor's product and facilities for distribution); V5= the presence of similar and easily substitutable products available from competitors; V6= the price levels of competitive products compared to your CIF(costs, insurance and freight) price in the host country market.

var2= presence of high legal restrictions in the host country was represented by variables V7,V8,V9,V10,V11, where V7= the foreign import regulations in host country; V8= tariffs, import duties and taxes assessed by host country on your products; V9= the tariff concessions allowed by host country(i.e. drawbacks, preferential tariffs); V10= the non tariff barriers like product standards imposed by the host country govt.(e.g. local assembly laws, local safety and environmental regulations); V11= regulations on limitations on the share of the foreign investor in host country.

var3 = a politically stable environment in the host country was represented by variables from V12, V13, V14, where, V12= the good diplomatic and political relations between India and host country; V13= the politically stable environment as depicted by the extent of representation and confidence of people in their Government; V14= the foreign government's internal policies, attitudes and actions towards private enterprise.

var4 = greater cultural and social similarity between the home and the host country was represented by V15, V16, V17, V18, where, V15= the degree of cultural unity and national integration in Host country; V16= the differences in lifestyle and customs of various groups in Host country; V17= cultural differences with the Host country; V18= the problems due to different language in Host country.

var5 = lower investment risk in the host country was represented by V19, V20, V21, V22, where, V19= the availability of tax advantages in Host country; V20= the low risk of converting and repatriating profits to India; V21= the availability of investment incentives in Host country; V22= the Foreign Investment Policy of Host country Government.

var6 = high market potential in the host country was represented by variables V23, V24, V25, V26, V27, V28, where, V23= the average annual sales of your type of product in Host country; V24= the future trends and growth rate of the Host country market in which your product would be sold; V25= the purchasing power of customers of Host country; V26= the adaptation costs associated with products; V27= the differences in product usage in Host country; V28= the need to change your product specifications due to differences in foreign buyer's tastes and preferences or technical requirements.

var7 = higher level of development and economic welfare of the host country is represented by variables V29, V30, V31, V32, where, V29= Gross National Product and per capita income in Host country; V30= education and employment levels in the local population; V31= the availability of reserves in Host country; V32= the wealth of Host country in natural resources and the extent of their development.

var8 = better infrastructure available in the host country is represented by V33, V34, V35, V36, V37, V38, where, V33= the Costs and efficiency of transportation to Host country from India(airlines, shipping lines etc.); V34= the costs and efficiency of transportation within Host country (roads, highways etc.); V35= the costs and efficiency of physical handling and warehousing in Host country; V36= the costs and efficiency of communications to Host country from India(email, phone etc.); V37= the costs and efficiency of communications within Host country(e.g. commercial broadcast media, print media); V38= the costs and efficiency of trade fairs and industrial exhibitions in Host country.

Tables A1- A4 in Appendix A revealed that Exporting market entry strategy was found to be dependent on the following sub factors: availability of greater types and number of competitive products in the market; competitor's market share, his coverage, and growth rate in Host country; the advantages and weaknesses of the competitors in the Host country market(for e.g. uniqueness of competitor's product and facilities for distribution); the presence of similar and easily substitutable products available from competitors; the price levels of competitive products compared to your CIF(costs, insurance and freight) price in the Host country market; the foreign import regulations in Host country; tariffs, import duties and taxes assessed by Host country on your products; the tariff concessions allowed by Host country(i.e. drawbacks, preferential tariffs); the non tariff barriers like product standards imposed by the Host country govt.(e.g. local assembly laws, local safety and environmental regulations); and regulations on limitations on the share of the foreign investor in Host country. Hence, to devise market entry strategy, competitive target market and legal restrictions in the host country are significant factors to be considered when choosing exporting entry method.

From our findings from Tables B1-B4 in Appendix A , we conclude that the following sub factors are significant for the choice of Management Service Contract market entry strategy: greater types and number of competitive products are available in the market; competitor's market share, his coverage, and growth rate in host country; the advantages and weaknesses of the competitors in the host country market(for e.g. uniqueness of competitor's product and facilities for distribution); the presence of similar and easily substitutable products available from competitors; and regulations on limitations on the share of the foreign investor in host country. Thus, the above mentioned sub factors related to competitive target market and legal environment in the host country have to be taken into consideration when devising Management Service Contract market entry strategy.

For the choice of Joint Venture market entry strategy, Tables C1-C4 in Appendix A revealed that the following sub factors were significant: good diplomatic and political relations between India and host country; the politically stable environment as depicted by the extent of representation and confidence of people in their Government; the foreign government's internal policies, attitudes and actions towards private enterprise; the problems due to different language in Host country; the availability of tax advantages in Host country; the low risk of converting and repatriating profits to India; the availability of investment incentives in Host country; the Foreign Investment Policy of Host country Government; the average annual sales of your type of product in Host country; the future trends and growth rate of the Host country market in which your product would be sold; the need to change your product specifications due to differences in foreign buyer's tastes and preferences or technical requirements; and education and employment levels in the local population. Thus, political environment of host country is a significant factor while devising Joint Venture market entry strategy. In addition, the above mentioned sub factors related to cultural and social similarity between the home country and host country, investment risk in the Host country, level of development and economic welfare of host country, market potential of host country are dependent factors for choosing a Joint Venture market entry strategy.

Tables D1-D4 in Appendix A revealed that to choose market entry strategy as Wholly Owned Subsidiary (WOS), these sub factors have to be considered: good diplomatic and political relations between India and Host country; the politically stable environment as depicted by the extent of representation and confidence of people in their Government; the foreign government's internal policies, attitudes and actions towards private enterprise; the availability of tax advantages in Host country; low risk of converting and repatriating profits to India; the availability of investment incentives in Host country; the Foreign Investment Policy of Host country Government; the average annual sales of your type of product in Host country; the future trends and growth rate of the Host country market in which your product would be sold; the differences in product usage in Host country; the need to change your product specifications due to differences in foreign buyer's tastes and preferences or technical requirements; education and employment levels in the local population; and the costs and efficiency of communications to Host country from India(email, phone etc.). Thus, political environment in the host country and investment risk in the host country are significant factors while devising WOS market entry strategy. In addition, the above mentioned factors are relevant related to market potential in the host country, infrastructure available in the host country, and level of development and economic welfare of the host country.

Thus, the findings of our study identified specific significant factors that should be taken into consideration while devising a particular market entry strategy. Significant host country factors were found for each of the four market entry strategies.

## FIRM SPECIFIC RESOURCES AND STRATEGIC ISSUES

Since the resource based theory propagates that a firm competes well in a setting in which there is a fit between the firm's resources and external opportunities, there lies the need to evaluate the influence of firms specific resources and strategic issues on the adoption of market entry strategy. Variables included under this category are greater firm size; greater international business experience of the firm; firm with a proprietary technology that is a sustainable competitive advantage in the host country; an organizational culture of the firm which is a sustainable competitive advantage in the host country; and a firm with a reputation for superior product, process or management technology.

M (rising levels of equity and control) was found to be positively associated with var9, var10, var11, var 12 and var13, where, var9 = greater firm size; var10= greater international business experience of the firm; var11 = firm with a proprietary technology that is a sustainable competitive advantage in the host country; var12= an organizational culture of the firm which is a sustainable competitive advantage in the host country; var13 = a firm with a reputation for superior product, process or management technology. Thus, firm specific resources and strategic issues were found to affect modal choice.

To specify a range of dependent variables and sub variables for each market entry strategy, a statistical tool, Compare Means was used. Each of these variables from var9 to var13 was further represented by the following variables to arrive at the conclusions about the factors which are significant for the choice of each market entry strategy. var9 = greater firm size is represented by variable V39 which represents the average turnover of the firm in the study. var10= greater international business experience of the firm is represented by V40 and V41, where, V40= the number of years since the firm has been involved in international business; V41= the number of years of experience in the particular industry in which the firm is operating. var11 = firm with a proprietary technology that is a sustainable competitive advantage in the host country is represented by V42, V43, V44, where, V42= the Unique patent(s) possessed by the firm; V43= the Trademark of the firm; V44= the Brand name recognition in Host country. var12= an organizational culture of the firm which is a sustainable competitive advantage in the host country is represented by v45, V46, V47, V48, where, V45= firm encourages open discussion; V46= firm de-emphasizes status distinction; V47= firm encourages experimentation and tolerates mistakes; V48= firm favors promotion from within. var13 = a firm with a reputation for superior product, process or management technology is represented by V49, V50, V51, V52 where, V49= protecting reputation for superior production process; V50= protecting reputation for superior management; V51= protecting reputation for superior quality; V52= protecting reputation for technological innovativeness.

Tables E1-E2 and F1-F2 in Appendix A revealed that there were no significant firm specific resources and strategic issues for the adoption of Exporting and Management Service Contract. According to the Tables G1-G2 in Appendix A, for the choice of Joint Venture market entry strategy, the following sub factors were significant: the average turnover of the firm; the number of years since the firm has been involved in international business; the number of years of experience in the particular industry in which the firm is operating; the Trademark of the firm; the Brand name recognition in Host country; firm encourages experimentation and tolerates mistakes; firm favors promotion from within; protecting reputation for superior management and protecting reputation for superior quality. Thus above mentioned sub factors related to size of the firm, international business experience of the firm, organization culture of the firm, proprietary technology in the host country and reputation for superior quality and management are dependent factors for choosing a Joint Venture market entry strategy. According to the Tables H1-H2 in Appendix A, to choose market entry strategy as WOS, these firm specific resources and strategic issues have to be considered: the average turnover of the firm; the number of years since the firm has been involved in international business; the number of years of experience in the particular industry in which the firm is operating; the Brand name recognition in Host country; firm encourages experimentation and tolerates mistakes; firm favors promotion from within; protecting reputation for superior management and protecting reputation for superior quality. In addition, the above mentioned factors are relevant related to size of the firm, international business experience of the firm, a firm's reputation for superior quality or management technology and organizational culture of the firm.

Thus, the above analysis revealed that there are no significant firm specific factors for the selection of non equity modes of market entry like Exporting and Management Service Contract. However, significant factors for the adoption of Joint Ventures and Wholly Owned Subsidiaries as market entry choice have been outlined.

## RECOMMENDATIONS

- 1) Inappropriate selection of market entry strategy could lead to even exit for the firm from the GCC market. Different host country factors and firm specific resources and strategic issues need to be considered when devising market entry strategies. The significant factors for consideration for each market entry strategy which have been found in this study should be considered before adopting a market entry mode.
- 2) An important significant factor that favours setting up of Wholly Owned Subsidiaries in GCC market is the government's legislations towards ownership, allowing 100% ownership in KSA, Kuwait and Bahrain in many sectors; and in selected projects in Oman and Qatar. Such favorable legislations and Government's encouragement towards FDI in several sectors, needs to be tapped to the fullest by Indian firms. Indian firms should take this into consideration and look forward to setting up Wholly Owned Subsidiaries in these markets.
- 3) The foreign import legislations, concessions and several relaxations in taxes and duties in GCC are significant factors promoting Exporting as a modal choice. Such favorable regulations make GCC a lucrative market for increasing export activities. Indian firms should carefully study the import requirements of this market and depending on their export capabilities; add new items to their export basket.
- 4) To build economic and commercial relations, Indian firms can look forward to establishing closer relations with Investment Promotion Agencies and Chamber of Commerce in the GCC market. Such closer ties would help them understand and avail an opportunity, select an appropriate partner, and get significant information about local firms before adoption of a particular entry mode.

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**TABLES**

**TABLE A1: OUTPUT OF MEANS FOR EXPORTING MARKET ENTRY STRATEGY (VARIABLE V2-V10)**

V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
1 Mean	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.75
N	8	8	8	8	8	8	8	8	8
Std. Deviation	.000	.000	.000	.000	.000	.000	.000	.000	.463

Source: the researchers' survey

**TABLE A2: OUTPUT OF MEANS FOR EXPORTING MARKET ENTRY STRATEGY (VARIABLE V11-V19)**

V1	V11	V12	V13	V14	V15	V16	V17	V18	V19
1 Mean	4.63	1.00	1.00	1.13	1.00	1.00	1.13	1.00	1.00
N	8	8	8	8	8	8	8	8	8
Std. Deviation	.518	.000	.000	.354	.000	.000	.354	.000	.000

Source: the researchers' survey

**TABLE A3: OUTPUT OF MEANS FOR EXPORTING MARKET ENTRY STRATEGY (VARIABLE V20-V28)**

V1	V20	V21	V22	V23	V24	V25	V26	V27	V28
1 Mean	1.00	1.00	1.00	1.38	1.88	1.13	1.50	1.38	1.38
N	8	8	8	8	8	8	8	8	8
Std. Deviation	.000	.000	.000	.518	.354	.354	.535	.518	.518

Source: the researchers' survey

**TABLE A4: OUTPUT OF MEANS FOR EXPORTING MARKET ENTRY STRATEGY (VARIABLE V29-V38)**

V1	V29	V30	V31	V32	V33	V34	V35	V36	V37	V38
1 Mean	1.00	1.00	1.00	1.00	1.00	1.25	1.13	1.00	1.00	1.00
N	8	8	8	8	8	8	8	8	8	8
Std. Deviation	.000	.000	.000	.000	.000	.463	.354	.000	.000	.000

Source: the researchers' survey

**TABLE B1: OUTPUT OF MEANS FOR MSC MARKET ENTRY STRATEGY (VARIABLE V2-V10)**

V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
2 Mean	4.00	4.00	4.00	4.00	3.67	3.67	3.67	3.67	3.67
N	3	3	3	3	3	3	3	3	3
Std. Deviation	.000	.000	.000	.000	.577	.577	.577	.577	.577

Source: the researchers' survey

**TABLE B2: OUTPUT OF MEANS FOR MSC MARKET ENTRY STRATEGY (VARIABLE V11-V19)**

V1	V11	V12	V13	V14	V15	V16	V17	V18	V19
2 Mean	4.00	2.00	2.33	2.00	2.33	2.00	2.33	2.00	2.00
N	3	3	3	3	3	3	3	3	3
Std. Deviation	.000	.000	.577	.000	.577	.000	.577	.000	.000

Source: the researchers' survey

**TABLE B3: OUTPUT OF MEANS FOR MSC MARKET ENTRY STRATEGY (VARIABLE V20-V28)**

V1	V20	V21	V22	V23	V24	V25	V26	V27	V28
2 Mean	2.00	2.00	2.00	2.33	2.00	2.33	2.00	2.00	2.33
N	3	3	3	3	3	3	3	3	3
Std. Deviation	.000	.000	.000	.577	.000	.577	.000	.000	.577

Source: the researchers' survey

**TABLE B4: OUTPUT OF MEANS FOR MSC MARKET ENTRY STRATEGY (VARIABLE V29-V38)**

V1	V29	V30	V31	V32	V33	V34	V35	V36	V37	V38
2 Mean	2.33	2.33	2.00	1.00	1.00	1.33	1.33	2.00	1.67	1.67
N	3	3	3	3	3	3	3	3	3	3
Std. Deviation	.577	.577	1.000	.000	.000	.577	.577	.000	.577	.577

Source: the researchers' survey

**TABLE C1: OUTPUT OF MEANS FOR JOINT VENTURE MARKET ENTRY STRATEGY (VARIABLE V2-V10)**

V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
3 Mean	1.89	2.00	2.11	2.22	2.22	2.44	2.33	2.44	2.33
N	9	9	9	9	9	9	9	9	9
Std. Deviation	.333	.000	.333	.441	.441	.527	.500	.527	.500

Source: the researchers' survey

**TABLE C2: OUTPUT OF MEANS FOR JOINT VENTURE MARKET ENTRY STRATEGY (VARIABLE V11-V19)**

V1		V11	V12	V13	V14	V15	V16	V17	V18	V19
3	Mean	2.00	4.00	4.11	4.00	3.11	3.33	3.33	4.00	4.00
	N	9	9	9	9	9	9	9	9	9
	Std. Deviation	.000	.000	.333	.000	.333	.500	.500	.000	.000

Source: the researchers' survey

**TABLE C3: OUTPUT OF MEANS FOR JOINT VENTURE MARKET ENTRY STRATEGY (VARIABLE V20-V28)**

V1		V20	V21	V22	V23	V24	V25	V26	V27	V28
3	Mean	4.11	4.00	4.00	4.00	4.00	3.44	3.67	3.78	4.00
	N	9	9	9	9	9	9	9	9	9
	Std. Deviation	.333	.000	.000	.000	.000	.527	.500	.441	.500

Source: the researchers' survey

**TABLE C4: OUTPUT OF MEANS FOR JOINT VENTURE MARKET ENTRY STRATEGY (VARIABLE V29-V38)**

V1		V29	V30	V31	V32	V33	V34	V35	V36	V37	V38
3	Mean	3.67	4.00	3.33	3.44	3.33	3.89	3.89	3.22	3.11	3.11
	N	9	9	9	9	9	9	9	9	9	9
	Std. Deviation	.500	.000	.500	.527	.500	.333	.333	.441	.333	.333

Source: the researchers' survey

**TABLE D1: OUTPUT OF MEANS FOR WOS MARKET ENTRY STRATEGY (VARIABLE V2-V10)**

V1		V2	V3	V4	V5	V6	V7	V8	V9	V10
4	Mean	2	1.91	1.91	1.91	1.36	1.36	1.18	1.27	1.36
	N	11	11	11	11	11	11	11	11	11
	Std. Deviation	0	0.302	0.302	0.302	0.505	0.505	0.405	0.467	0.505

Source: the researchers' survey

**TABLE D2: OUTPUT OF MEANS FOR WOS MARKET ENTRY STRATEGY (VARIABLE V11-V19)**

V1		V11	V12	V13	V14	V15	V16	V17	V18	V19
4	Mean	1.18	4.09	4.91	5	3.91	3.55	3.64	4	4.27
	N	11	11	11	11	11	11	11	11	11
	Std. Deviation	0.405	0.302	0.302	0	0.302	0.522	0.674	0	0.467

Source: the researchers' survey

**TABLE D3: OUTPUT OF MEANS FOR WOS MARKET ENTRY STRATEGY (VARIABLE V20-V28)**

V1		V20	V21	V22	V23	V24	V25	V26	V27	V28
4	Mean	4.55	4.27	4.64	4.09	4.09	3.73	3.64	4.09	4
	N	11	11	11	11	11	11	11	11	11
	Std. Deviation	0.522	0.467	0.505	0.302	0.302	0.647	0.674	0.539	0.447

Source: the researchers' survey

**TABLE D4: OUTPUT OF MEANS FOR WOS MARKET ENTRY STRATEGY (VARIABLE V29-V38)**

V1		V29	V30	V31	V32	V33	V34	V35	V36	V37	V38
4	Mean	3.91	4.09	3.36	3.36	3.45	3.73	3.73	4	3.36	3.36
	N	11	11	11	11	11	11	11	11	11	11
	Std. Deviation	0.302	0.302	0.505	0.505	0.522	0.647	0.647	0	0.505	0.505

Source: the researchers' survey

**TABLE E1: OUTPUT OF MEANS FOR EXPORTING MARKET ENTRY STRATEGY (VARIABLE V39-V46)**

V1		V39	V40	V41	V42	V43	V44	V45	V46
1	Mean	1.13	1.25	1.13	1.00	1.13	1.50	1.00	1.00
	N	8	8	8	8	8	8	8	8
	Std. Deviation	.354	.463	.354	.000	.354	.535	.000	.000

Source: the researchers' survey

**TABLE E2: OUTPUT OF MEANS FOR EXPORTING MARKET ENTRY STRATEGY (VARIABLE V47-V52)**

V1		V47	V48	V49	V50	V51	V52
1	Mean	1.00	1.00	1.00	1.00	1.00	1.13
	N	8	8	8	8	8	8
	Std. Deviation	.000	.000	.000	.000	.000	.354

Source: the researchers' survey

**TABLE F1: OUTPUT OF MEANS FOR MSC MARKET ENTRY STRATEGY (VARIABLE V39-V46)**

V1		V39	V40	V41	V42	V43	V44	V45	V46
2	Mean	1.67	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	N	3	3	3	3	3	3	3	3
	Std. Deviation	.577	.000	.000	.000	.000	.000	.000	.000

Source: the researchers' survey

**TABLE F2: OUTPUT OF MEANS FOR MSC MARKET ENTRY STRATEGY (VARIABLE V47-V52)**

V1		V47	V48	V49	V50	V51	V52
2	Mean	2.00	2.00	1.00	2.00	2.00	2.00
	N	3	3	3	3	3	3
	Std. Deviation	.000	.000	.000	.000	.000	.000

Source: the researchers' survey

**TABLE G1: OUTPUT OF MEANS FOR JOINT VENTURE MARKET ENTRY STRATEGY (VARIABLE V39-V46)**

V1		V39	V40	V41	V42	V43	V44	V45	V46
3	Mean	4.00	4.00	4.00	3.89	4.00	4.00	3.89	3.67
	N	9	9	9	9	9	9	9	9
	Std. Deviation	.000	.000	.000	.333	.000	.000	.333	.500

Source: the researchers' survey

**TABLE G2: OUTPUT OF MEANS FOR JOINT VENTURE MARKET ENTRY STRATEGY (VARIABLE V47-V52)**

V1		V47	V48	V49	V50	V51	V52
3	Mean	4.00	4.00	3.67	4.00	4.00	3.89
	N	9	9	9	9	9	9
	Std. Deviation	.000	.000	.500	.000	.000	.333

Source: the researchers' survey

**TABLE H1: OUTPUT OF MEANS FOR WOS MARKET ENTRY STRATEGY (VARIABLE V39-V46)**

V1		V39	V40	V41	V42	V43	V44	V45	V46
4	Mean	4	4.09	4.09	3.64	3.73	4.09	3.91	3.91
	N	11	11	11	11	11	11	11	11
	Std. Deviation	0	0.302	0.302	0.505	0.467	0.539	0.302	0.302

Source: the researchers' survey

**TABLE H2: OUTPUT OF MEANS FOR WOS MARKET ENTRY STRATEGY (VARIABLE V47-V52)**

V1		V47	V48	V49	V50	V51	V52
4	Mean	4	4	3.36	4.18	4.18	3.64
	N	11	11	11	11	11	11
	Std. Deviation	0	0	0.674	0.405	0.405	0.674

Source: the researchers' survey

## STUDENTS' PERCEPTIONS OF ACADEMIC STAFF SERVICE QUALITY IN ETHIOPIA: A CASE STUDY OF COLLEGE OF BUSINESS AND ECONOMICS, MEKELLE UNIVERSITY

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### ABSTRACT

*An attempt has been made in the present study to explore, analyze, and measure students' perception on their academic staff service quality in the College of Business and Economics (CBE), Mekelle University, as well as to identify the dimensions that determine the students' evaluation of service quality. Moreover, the relationship between service quality, student satisfaction, propensity to recommend and students switching intention was examined. A total of 287 (out of 327 sample) students both from the day, summer, and evening academic programs were responding the SERVQUAL instrument. After the reliability and validity test, hypotheses were tested. Its finding revealed that students' expectation was not met; assurance, empathy, and outcome dimensions as the most predictors of students' overall service satisfaction; overall satisfaction had positive significant impact on their propensity to recommend and switching intention; and assurance is rated as the most important dimension and tangible as the least important. The study also suggested that service assessment be repeated from time to time for continuous service improvement through cooperative venture between students and academic staffs. Generalization to the university as a whole may not be legitimate. This study provides insights into the measurement of administrative service perceptions.*

### KEY WORDS

Expectations, Perceptions, Satisfaction, SERVQUAL, Quality.

### INTRODUCTION

Service quality is defined in the marketing literature as *a post-consumption evaluation of services by consumers that compare expectations with perceptions of performance* (Parasuraman et al., 1985). Service quality evaluations are based on the manner in which the service was delivered (i.e., functional quality) and what outcome resulted from that service (i.e., technical quality) (Gronroos, 1993). For the purpose of this study, academic staff service quality is defined as students' perceptions on academic staff service performance regarding both functional and technical quality.

Service quality is about meeting customers' needs and requirements, and how well the service level delivered matches customer expectations (Bhat, 2004). Offering superior solutions for customers needs becomes a prerequisite to provide a sustainable competitive advantage for a firm, and being customer-focused is a prime imperative for a firm, whether the firm is a manufacturing or service provider (Morison and Davis, 2004). Therefore, an educational institution needs to differentiate itself from competitors in order to compete effectively in the marketplace. The use of marketing in this context is very helpful to educational institutions.

Marketing can serve society if its true meaning is applied. According to Krachenberg (1972) marketing deals with the concept of uncovering specific needs, satisfying these needs by the development of appropriate goods and services, letting people know of their availability, and offering them at appropriate prices, at the right time and place. Although some educators may be concerned with the business orientation of marketing, this definition shows how marketing can perform a service to society. The major question, however, ought to be "what makes one service provider stand out in the mind of the consumer over the others providing similar services?" Berry and Parasuraman (1992) argued that the strategic success of a service organization depends on the ability of service providers to enhance their images by consistently meeting or exceeding customers' service expectations. The measuring of consumer perceptions as to the level of service quality therefore becomes critical.

Services present special challenges for institutions of higher learning, i.e., the most intangible one, which must be identified and addressed. These challenges are inability to inventory, difficulty in matching demand and supply, and challenges in controlling the performance quality of human interactions due to encounters and inseparability of service production and consumption. The attraction, retention, and building of strong student relationships through quality service should be at the heart of the institution's system to defy such emerging service challenges. Moreover, there must be an integrated customer focus across the firm: all strategies should be developed with an eye on the student, all implementations should be carried out with an understanding of their impact on the student, and all monitoring and evaluation as well as student solutions should be made from the student point of view.

In the area of higher education, where they are accountable to their constituents, universities and faculties have been striving to provide high quality services because they need to compete for their students. Measuring the quality of their services using appropriate model adapted to the education context is therefore an important task, especially for those institutions that give a feed back on the dimensions of quality, because it offers them the possibility for significant competitive advantages in the knowledge market. It has been noted that most of the quality models that are commonly practiced in the business world have been adopted and used in the education sector as discussed in the following section (2.2).

### REVIEW OF RELATED LITERATURE

#### PARADIGM SHIFT IN INSTITUTIONS OF HIGHER LEARNING

Earlier research has demonstrated that consumers were reluctant to complain about poor professional service, such as education, but these same consumers are becoming increasingly more value conscious. There is mounting pressure from the customers of higher education, which include students, parents, alumni, employers and legislators, to close the widening gap between their expectations of institutional performance and the actual performance (Brigham, 1994; Gronhaug and Arndt, 1980; Quelch and Ash, 1981). This indicates how imperative it is for institutions of higher learning to actively monitor the quality of their services and commit to continuous improvements in an effort to respond to the needs of the institutional constituencies.

Ballard (1986) at a "Conference on Education as an International Commodity," argued that it would be in the universities' interests to alter their product to suit the market in order to be successful. Universities are expected to change to meet students' needs and students in their identity as customers will have expectations and perceptions of quality service. However, the very complexity of higher education is an obstacle for students trying to make reasoned judgments on which to base expectations, this in turn makes it difficult to analyze how satisfaction can be achieved. Even so, identification of students as customers has implications for the treatment of students. A university as a service provider needs to uncover students' expectations, and then if necessary, educate students to have appropriate expectations and then actually deliver even better service than promised.

The current climate in tertiary education places students as primary consumers. As Darlston-Jones et al. (2003) explained students are becoming more conscious of their customer rights and of gaps between their expectations of service delivery and the reality of that service. This service gap presents a quality assurance challenge and it is also likely to contribute to student attrition. For example, in 2003, Darlston-Jones et al. noted that the Australian universities have undergone a major transition in the past decade as they have moved from public to a greater emphasis on private funding, and re-invested themselves as business enterprises. Furthermore, students are viewing themselves as consumers and are demanding value for money in their education.

**SERVQUAL MODEL FOR SURVEYING PERCEIVED SERVICE QUALITY OF INSTITUTIONS OF HIGHER LEARNING**

Managing quality in the education context should be handled differently from that of manufacturing or other service industries (Madu and Kuei, 1993). Most of the quality models that are commonly practiced in the business world have been adapted to suit an educational context and used in the education sector. For example, the Total Quality Management (TQM) philosophy, where one of the fundamental principles of TQM is customer satisfaction, has been applied to schools and colleges in the UK, USA and in Asian countries such as Malaysia (Barnard, 1999; Kanji and Tambi, 1998, 1999). In addition, Chua (2004) said that tertiary institutions were using the quality practices such as the European Foundation for Quality Management (EFQM) excellence model, ISO 9000, Malcolm Baldrige National Quality Award (MBNQA), Singapore Quality Award (SQA), School Excellence Model (SEM), and the Service Quality (SERVQUAL). Moreover, Cronin and Taylor (1992) advanced the use of Service Performance (SERVPERF) and Teas (1993) proposed Evaluated Performance (EP). These all models embrace the philosophy of TQM that has been modified for the education environment.

Researches made on quality of education indicated that the tertiary education institutions are critically examining the student, academic staff and administrative staff service satisfaction on the basis of the gap between their service expectation and service perception (Darlaston-Jones et al., 2003; Pariseau and McDaniel, 1997; Petruzzellis et al., 2006; Sherry et al., 2004; Soutar and McNeil, 1996; Waugh, 2001) as recommended by the Parasuraman et al. (1988). SERVQUAL becomes the most popular service quality methodology, adapted and widely applied to measure the quality in the education context. Moolla and DuPlessis (2001) described the SERVQUAL model as being customer-oriented because it is concerned with the experiences and the needs of the customer.

SERVQUAL is a questionnaire designed to measure service quality that has been developed, refined and tested in the business area since 1985. The consumers of any service want to have the provider meet their expectations in the areas of reliability, responsiveness, assurance, empathy and tangibles. These five dimensions represent the determinants of the perception of service quality on the part of the consumer. The five suggested service quality dimensions are (Zeithaml and Bitner, 2003):

1. Tangibles (physical facilities, equipment, appearance of personnel),
2. Reliability (ability to perform the promised services dependably and accurately),
3. Responsiveness (willingness to help and provide prompt service),
4. Assurance (knowledge and courtesy of employees and their ability to inspire confidence), and
5. Empathy (caring, individualized attention the firm provides its customers).

Kettinger and Lee (1995) underlined that while versions of SERVQUAL continue to be critiqued and improved (Cronin and Taylor, 1994), it stands as the pre-eminent instrument for assessment and measurement of perceived service quality. Carden and Dellifraigne (2004) also claimed that the SERVQUAL satisfaction survey instrument is one of the most widely used techniques for obtaining quantitative measures of customer satisfaction in the United States. Customers assess service quality by comparing their expectations of service with their perceptions of service received (Wisniewski, 2001b). The difference between the customer perceptions and expectations is referred as the satisfaction gap (Parasuraman, et al., 1988).

There is evidence in the educational literature that pharmacy students use educational outcomes to evaluate the schools they attend. Fjortoft and Lee (1994) found student perceptions of their intellectual development (i.e., an educational outcome which describes self evaluations of knowledge and skill gained and their relevance to student career goals) to be an important variable in student assessments of their school experiences. For these reasons, it is important that any instrument that assesses the service quality of education should assess both technical and functional quality. Therefore, this study employed SERVQUAL model using six dimensions: the Parasuraman et al's five-service quality dimensions (i.e., functional quality) and Gronroos's sixth dimension called technical quality (i.e., outcome) that are customized for higher learning institution. Both students' service expectations and perceptions are collected and analyzed. In addition, the service quality and service satisfaction is conceptualized and operationalized as follows based on the related literature discussed above:

Service Quality = f (Tangibles, Reliability, Responsiveness, Assurance, Empathy, Outcome)

$$S = \alpha + \beta_1 (T) + \beta_2 (RI) + \beta_3 (Rs) + \beta_4 (A) + \beta_5 (E) + \beta_6 (O) + e_i \tag{1}$$

Where, S = overall satisfaction

$\alpha$  = Constant;  $\beta_i$  = Coefficient of the dimensions of quality

T = Tangible; RI = Reliability; Rs = Responsiveness; A = Assurance;

E = Empathy; O = Outcome;  $e_i$  = Error term

Service Satisfaction = f (Perception (P) – Expectation (E))

$$S = \sum_{j=1}^k (P_{ij} - E_{ij}) \tag{2}$$

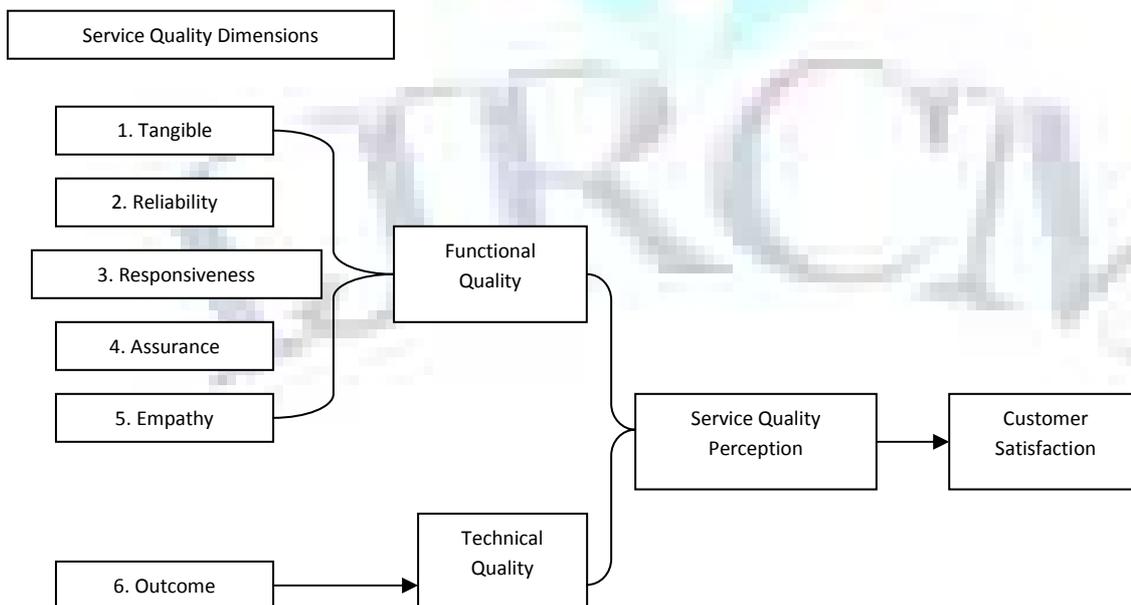
Where, S = Overall service satisfaction; k= number of attributes.

$P_{ij}$  = Performance perception of stimulus i with respect to attribute j.

$E_{ij}$  = Service quality expectation for attribute j that is the relevant norm for stimulus i.

$P > E$  = Satisfaction;  $P < E$  = Dissatisfaction; and  $P = E$ , neither satisfaction nor dissatisfaction.

**FIGURE 1: SERVICE QUALITY AND SATISFACTION MODEL**



Source: Adapted from Kang and James (2004)

## REVIEW OF LITERATURE ON INSTITUTIONS OF HIGHER LEARNING SERVQUAL

Student retention has received increased attention as competition for students has escalated among colleges and universities. It is important to measure service quality and use the tools of continuous improvement since service quality and student satisfaction are important factors in student retention. Coate (1990) explained quality as what our customers tell us it is, not what we say it is. Progress can only be determined and improved by measurement. Zeithaml and Bitner (1996) argued that most students are in School to learn what they do not know. However, not knowing the subjects they are studying does not prevent them from making judgments about their professors. Cues such as the tangibles accompanying the service (overheads and other presentation materials), the professor's appearance of nervousness, degree of confidence communicated, or even whether the professor starts and ends class on time, are used to infer competence. Thus, this section is dedicated to present some of the research findings in the area of students' academic service quality perceptions (i.e., faculty's in-out of class services).

Chua (2004) has assessed the perception of quality in higher education of the School of Business Management, Ryerson University, Toronto-Canada, using the **input-process-output** (IPO) framework. This study supported the fact that different groups of customer have different perspectives of quality. Students' perspective of quality falls into mainly the process (46.56%) and output (46.56%); parents seemed to think that quality should be in terms of input (46.52%) and output (46.52%); faculty's perspective of quality focus on all aspects of their activities, i.e., input-process-output; and the employers considered quality in terms of process (41.27%) and output (58.73%). The students gave most of the suggestions of improvement pertaining to the process of the education system to achieve quality output. Some of the suggestions mentioned were caring professor, provision for various support services for students, provision for a variety of advising services, participation in curriculum design, and encouragement for lifelong learning. They also noted that there is a large variation in terms of quality teaching, such as contents, feedback, and assessments to inspire learning. For most quality dimensions, students expect more than what they perceive the school would provide. Using the paired t-test, this study indicated that all dimensions except reliability were significant. Moreover, the study showed that all the quality dimensions are primarily related to the educational process of the IPO framework.

Faganel and Macur (2003/04) conducted a case study at the Faculty of Management, Koper, Slovenia by using the SERVPERF model (i.e., an instrument used to measure perception of performance only) in order to identify the most important quality dimensions. Their results showed that students and professors understand quality differently. Students' understanding of service quality can be described with two factors consisting of several items. The first factor includes four out of five quality dimensions, i.e., reliability, responsiveness, assurance, and empathy; while the second factor which is less important consists of only one quality dimension, i.e., tangibles; which is less important in understanding quality and do not influence students' satisfaction as much as others. On the other hand, the academic staffs understand quality in different way than the students. They recognize five different quality dimensions which differ from the Parasuraman et al. They find (1) attention to students, (2) being regular and timely in informing students about services, (3) realization of planned services and students' suggestions, (4) attractiveness of study materials and other service materials, and appropriateness of service hours, and (5) service performance in time as the most important determinant of quality, respectively.

Darlaston-Jones et al. (2003) carried out survey on student expectations of higher education at the School of Psychology, Edith Cowan University, located in the Western Australian capital of Perth using the SERVQUAL model. This study showed that there is a difference between student expectations of university and the reality of their experience. The students anticipate having close contact with their lecturing staff to the degree that the lecturer would know each student and his/her personal situation. Besides, students need to have facilities and resources available to them at times that are convenient to students not just the university.

Sherry et al. (2004) have undertaken an assessment of the local and international students' perceptions of services experienced at New Zealand Tertiary Institute, UNITEC using the SERVQUAL model. The study indicated that expectations gap was larger for the international students on all five dimensions. It confirmed concerns of the international students with issues of assurance. The students were not confident that they are getting value for money, or that the skills they are being taught will get them good results both academically and for future employment. They were unsure of lecturers' knowledge in their subject area and do not feel that adequate ranges of support service are being offered to them. Their study indicated that international students do not feel taken care of by the UNITEC staff. It also showed higher expectations of international students in the responsiveness, empathy and assurance dimensions. It means international students have certain expectations of services they think a tertiary institute should fulfill, such as learning support services, quality teaching, good staff-student communications and prompt feedback from tutors.

Holdford and Reinders (2001) conducted a study to measure quality of pharmaceutical education using the SERVQUAL instrument at the School of Pharmacy, Virginia Commonwealth University. This study found that student perceptions of faculty significantly affect the manner in which students approach their school work. Student perceptions of faculty reliability, trustfulness, and communication have been found to affect student compliance and cooperation with faculty class assignments (Holdford and Wright, 1997). It indicates that education is a cooperative venture between students and faculty.

Ruby (1998) has tried to demonstrate how the use of SERVQUAL, a market-driven assessment model adapted from business, can be used to study student satisfaction with four areas of support services related to enrollment management (academic records, admissions, career services, and financial aid). This study was conducted at ten institutions that were members of the Coalition of Christian Colleges and Universities (CCCU) in Ohio. In the case of career services, the result identified the following service factors with the largest negative gaps (i.e., perception – expectation) requiring improvement: providing office hours that are convenient to students, avoiding the appearance of being too busy to help students, making sure that staff members are knowledgeable about career services issues, demonstrating an understanding of student needs, maintaining error free records, demonstrating a commitment to students' best interests, communicating a willingness to help, providing personal attention to students, being courteous to students, and performing services correctly the first time.

Pariseau and McDaniel (1997) assessed service quality in two small private business schools employing the SERVQUAL model in the north-east region of the USA where teaching is given primary importance. Their results showed that the faculty and business schools were not delivering quality service in the view of their students, ANOVA tests confirmed significant differences in perceptions of service quality; and student expectations were highest in the area of assurance. The second most important factor for students was responsiveness and rank tangibles last. However, the faculty rank tangibles second and responsiveness last. In sum, this study found that the most important determinants of overall quality for students were assurance, reliability, and empathy.

Soutar and McNeil (1996) have undertaken a pilot study that attempted to assess service quality in a number of units in a large Australian university using the SERVQUAL model. Students were found to be quite satisfied with the quality of the academic units surveyed although there were small gaps ranging from 0.79 to 0.18. This study showed that not all dimensions were significant. Reliability, assurance and responsiveness influenced student satisfaction, suggesting that dependability was a key feature sought in the academic encounter. Tangible and empathy were not determinants of student satisfaction.

Thus, the aforementioned empirical studies have indicated both applicability and its indispensable role of SERVQUAL model in higher learning institutions.

## RATIONAL FOR THE STUDY AND METHODOLOGY

### RATIONAL FOR THE STUDY

The Ethiopian public higher learning institutions' may still view themselves as bastions of education, but they are also businesses subject to the same market forces as the private ones. The government has been embarking to introduce an entrepreneurial approach to these institutions. They are under increasing pressure to demonstrate value for money- quality outcomes, excellence, and cost effectiveness- in response to the government fund and student cost-sharing (regular) and full-cost system (evening, summer, and distance). Such switching from haven of bastion to a service market-driven and customer focus (internal and external) is a challenge. It requires a change in management mind-set (who are the change leaders), change in culture, changes in the ways people work and are rewarded, and new ways of implementing customer solutions and relationships.

As their practices indicated, the Ethiopian public institutions of higher learning are following an inside-out approach, act as if they know what their students needs and deliver that, rather than finding out what they do want. However, an excellent approach to quality stressed the importance of customer satisfaction and customer solution (seamless prompt complaint redressing). To improve quality services to these customers, the service giving institution must first

understand their needs through the quality attributes embraced by the customers. A far better approach follows an outside-in approach, i.e., determining customer expectations and then delivering. Thinking outside-in approach requires an enabling environment of institutional continuous service assessment and improvement. The minimum requirement is having listening strategy. There may be discrepancies between students' expectations and the institution's model of what constitutes quality service. The institutions of higher learning management may be working hard to deliver some aspect of service to which the students are indifferent. Conversely, students may be basing their opinion of quality on some factor that the management assumes is unimportant.

Moreover, all types of organizations are being challenged all over the world by a rapidly changing environment. This is also true for institutions of higher learning; seriously challenging higher learning institutions to change not only in order to adapt, but also to contribute to the change. Ethiopia needs strong higher learning institutions in order for the nation itself to be strong. Increased liberalization and globalization of the higher education system seriously reinforces the climate of competition between the higher learning institutions. This is happening in a time of increasing competition between traditional institutions, the emergence of new types of institutions, increasing costs of teaching, and increasing difficulties for the public authorities to allocate the public funds which would be required, in particular due to other priority obligations. The consequences are serious, even threatening; those institutions which do not adapt fast enough or lead this change by taking proactive measures risk losing their importance and eventually disappearing. If this is recognized, especially by the private institutions, **why shouldn't it be also true for the Ethiopian higher learning institutions?**

In summary, the existing Ethiopian institutions of higher learning system is (1) an inward-outward looking than following an outward-inward approach, (2) focus on faculties' instructional quality (in-class services) than both in-out of class services, and (3) measures only students' perception on instructional quality than measuring both expectations and perception. Thus, it is this gap in the Ethiopian higher education quality assurance (i.e., ignorance of students service expectation and perception) which led to the problem statement called **"STUDENTS' PERCEPTIONS OF ACADEMIC STAFF SERVICE QUALITY IN ETHIOPIA: A CASE STUDY OF COLLEGE OF BUSINESS AND ECONOMICS (CBE), MEKELLE UNIVERSITY"**. Are students really served? An exploratory research was undertaken to explore students' perception of academic staff service quality by assessing their service expectation, perception, and gap by using the SERVQUAL model adapted to tertiary education context.

#### RESEARCH OBJECTIVES

The purpose of this study was to explore how the FBE's academic staff service quality was perceived by students. It has been conducted with the following specific objectives in view:

1. Assess current level of perceived service quality for identifying the areas where customers have particularly high or low service gaps (i.e., the gap between the expectation and perception),
2. Evaluate how the quality factors are rated on the degree of importance and how actually are performed (perceived),
3. Measure whether variability is explained by the independent variables (service quality dimensions),
4. Measure the effects of service satisfaction on students' propensity to recommend and switching intentions, and
5. Suggest, on the basis of study results, ways and means for improving academic staff service quality.

#### RESEARCH HYPOTHESES

The research hypotheses formulated to accomplish the specified research objectives included:

- H1: There are no significant mean differences between students' expectations and perceptions regarding the quality dimensions. [Paired-Samples T Test]  
 H2: The service quality dimensions are not significant predictors of students' overall satisfaction. [Multiple Regression Analysis]  
 H3: There is no significant impact of students overall satisfaction on the propensity to recommend the FBE to others. [Pearson's Correlation]  
 H4: There is no significant impact of students overall satisfaction on switching intention from the FBE. [Pearson's Correlation]

#### RESEARCH METHODOLOGY

This study aimed at exploring the FBE students' service perceptions, expectations, and satisfaction on instructors' academic services. It was a quantitative research methodology employing the SERVQUAL model. The questionnaire instrument was an adaptation of the five service quality dimensions (functional quality) (Parasuraman et al., 1988, 1991b) that were initially designed to assess organizations and businesses in the service sector and the sixth technical quality dimension (Gronroos, 1993). Carman (1990) recommended that modifications in service quality instruments are often necessary to make them appropriate for specific industries. Thus, the Parasuraman et al.'s survey questions was adapted in congruent to the international experience to analyze the students' service expectations and perceptions of academic staff services.

Both primary and secondary data were collected. The primary data was collected through questionnaire adapted from the SERVQUAL survey questions in order to identify the service gap between perceptions and expectations of the service factors. All survey questions were positively worded based on previous research that found no advantage in including a mix of positively and negatively worded items (Parasuraman et al., 1991b). On the other hand, secondary data was collected from books, articles, journals, and Internet to enrich and critically analyze the subject under study.

2, 200 students attending their undergraduate programs during the 2009/10 academic year in the regular, summer, and evening programs were targeted (MUR (2010). Multiple-stage stratified random sampling was employed to select 327 from 2,200 students where samples of members from each stratum were drawn using systematic random sampling procedure. Judicious mixes of gender, academic program, department, and year/batch was considered. The registrar's student record was used as a population frame. Krejcie and Morgan (1970) had greatly simplified sample size decisions by providing a table that ensures a good decision model. Thus, this table was consulted in determining adequate sample size, i.e. this table recommended to take 327 samples from 2,200 populations.

Data obtained through questionnaire was appropriately edited, coded, categorized and entered in to an SPSS program for statistical applications (descriptive as well as inferential), wherever appropriate. The three data analysis objectives were met through:

1. **Getting a feel for the data** using frequency and descriptive statistics.
2. **Testing goodness of data** using the Pearson's Correlation, Reliability Analysis [Cronbach's alpha] and Factor Analysis [factor load], and
3. **Testing of hypothesis** using valid statistical testing instruments such as Pearson's correlation, paired-samples t-test, and multiple regressions that were convenient to the data type collected and the particular hypothesis question.

#### SIGNIFICANCE OF THE STUDY

The study will benefit the CBE, Mekelle University, students and staff, potential researchers in this area and the nation at large.

1. The institutions of higher learning will benefit from the research findings in terms of (a) coping up with their student service expectations, (b) adapting to the changing national and global academic environment, and (c) educating their customers to have a reasonable level of service expectations through continuous service quality assessment.
2. The students will benefit in terms of getting improved future academic staff services as the findings may be useful to the CBE.
3. The academic staffs will benefit in terms of identifying what their students are exactly expecting and bridge the service gap.
4. The potential researchers have an additional data warehouse in the area of higher learning institutions' service quality assessment.
5. The nation at large (including the government, parents, and employers) will benefit in terms of having a quality graduates who are skilled, knowledgeable, motivated, creative, innovative, and ethical.
6. Finally, it contributes to the stockpile of literature on service quality and customer satisfaction, especially from the developing countries.

#### SCOPE AND LIMITATION

This study was addressing only the 2<sup>nd</sup> year day, and all batches of the summer and evening students who were attending in the 2009/10 academic year in the CBE, Mekelle University, Ethiopia. The data on students' perceptions and expectations was filled at the same time than at different intervals owing to the time constraint. The research finding gives comprehensive picture about the CBE students' service perceptions on their academic staff services. Thus, future research could be conducted by (1) covering the students who are attending in the day, summer, evening, and distance programs in all the colleges, and (2) collecting data at reasonable intervals (first about students' expectations and later about their perceptions on the same sample respondents). Besides, this research

finding had limitation for generalization. The study examined the responses of one college (i.e., the College of Business and Economics). Conclusions to other colleges or the university as a whole may not be valid. Further research is worth pursuing to assess how the students' academic staff service quality assessments vary over time in the CBE and in the different colleges, and to compare the CBE findings with other faculties.

### ANALYSIS, INTERPRETATION, AND PRESENTATION OF FINDINGS

The survey instrument was designed around the validated SERVQUAL instrument which measures perceived service quality by calculating the direction and discrepancy between consumers' perceptions and expectations across 26 items using a seven-point Likert scale. The 22 items are related to the functional quality (Parasuraman et al., 1988) and 4 items related to the technical quality, i.e., outcome, (Gronroos, 1993). In addition, students were asked to evaluate the overall quality of services provided by the college, their level of propensity to recommend the college to others, their level of loyalty to continue in the college, and to rate the quality of services rendered by the college.

SERVQUAL survey questionnaire was distributed to 327 students of the College of Business and Economics (CBE) sampled from 2,200 students who were attending in the day/regular, evening, and summer programs during the 2009/10 academic year. Questionnaires were administered during the II-semester and III- term (i.e., summer) of the 2009/10 academic year. Students were given verbal and written instructions on how to fill the questionnaire as well as a brief explanation on its content and objective.

#### CHARACTERISTICS OF THE SAMPLE

Frequency distribution was used to "getting a feel for the data", i.e., to describe sample characteristics. Of the 327 questionnaires distributed, 287 were returned completed, representing a return/response rate of about 87.8%. Subsequently, the characteristics of the sample are shown below based on the respondents' demographic variables (i.e., age, gender, academic program, department, and year/batch).

TABLE 1: CHARACTERISTICS OF SAMPLE RESPONDENTS

	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
<b>Age</b>				
21-30	189	65.9	65.9	65.9
31-40	79	27.5	27.5	93.4
41-50	19	6.6	6.6	100.0
Total	287	100.0	100.0	
<b>Gender</b>				
Female	80	27.9	27.9	27.9
Male	207	72.1	72.1	100.0
Total	287	100.0	100.0	
<b>Academic Program</b>				
Regular	110	38.3	38.3	38.3
Summer	104	36.2	36.2	74.6
Evening	73	25.4	25.4	100.0
Total	287	100.0	100.0	
<b>Department</b>				
Accounting & Finance	108	37.6	37.6	37.6
Management	64	22.3	22.3	59.9
Economics	64	22.3	22.3	82.2
Computer Science	26	9.1	9.1	91.3
Business Education	25	8.7	8.7	100.0
Total	287	100.0	100.0	
<b>Year</b>				
Second Year	152	53.0	53.0	53.0
Third Year	25	8.7	8.7	61.7
Fourth Year	74	25.8	25.8	87.5
Fifth Year	6	2.1	2.1	89.5
Sixth Year	30	10.5	10.5	100.0
Total	287	100.0	100.0	

65.9% of the respondents were aged between 21-30 years while 27.5% were in the 31-40 age; and only 6.6% of the respondents were aged between 41- 50 years. No respondent aged above 50 years. The response rate was 27.9% for females and 72.1% for males; 38.3% regular, 36.2% summer, and 25.4% evening academic program; Department of Accounting and Finance (37.6%), Management (22.3%), Economics (22.3%), Computer Science (9.1%), and Business Education (8.7%) respectively; and second year (53%), third year (8.7%), fourth year (25.8%), fifth year (2.1%) and six year (10.5%) respectively.

#### GOODNESS OF DATA

Validity analysis (i.e., factor analysis) and Reliability analysis (i.e., Cronbach's alpha) were used to measure the "goodness of fit" of the data for further analysis. Factor analysis was used to make pre analysis testing (1) to check for adequacy of sample and (2) to determine factor loadings for including or excluding factors. This study used factor analysis for checking adequacy of sample through Kaiser-Meyer-Olkin (KMO) and factor loadings through Extraction Method- Principal Component Analysis.

#### FACTOR AND RELIABILITY ANALYSIS

TABLE 2: KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.903
Bartlett's Test of Sphericity	Approx. Chi-Square	3341.877
	df	325
	Sig.	.000

The 0.903 coefficient of KMO indicated that adequacy of the sample size for factor analysis, besides this measure suggests that the correlation matrix is appropriate for factor analysis (KMO > 0.813); and the Bartlett's Test of Sphericity was significant at  $p < 0.01$  which shows the appropriateness for factor analysis. The KMO for the construct exceeded 0.60, i.e., the threshold recommended by Kaiser and Rice (1974) and Sharma (1996); and the factors are high loaded,  $\geq 0.40$ , (Hair et al., 1998).

The factor loads below (Table 3) indicate that the items in the quality model were fit to measure the students' academic staff service perceptions, except **Tangible** dimension and **Q12PE**, i.e. the candidate for deletion. Besides, according to the item-to-total-correlation **Q1PE**, **Q2PE**, **Q3PE**, **Q4PE**, **Q5PE**, and **Q14PE**

are candidates for exclusion for being lower than 0.50. On the other hand these items are satisfying the minimum factor load requirement (0.40). The reliability test (Table 3) also indicates that the alpha coefficient would not be increased by the removal of these items, except for Q2PE and Q3PE. The 0.9260 alpha for all items and the 0.8827 alpha for all dimensions revealed strong internal consistency; it exceeds 0.70, i.e., the threshold recommended by Nunnally (1978), except Tangible.

TABLE 3: COMMUNALITIES AND RELIABILITY ANALYSIS-CRONBACH'S ALPHA

Service Quality Items and Dimensions		Item-Total Correlation	Factor Load	Alpha If Item Deleted
<b>Tangible</b>		<b>.4796</b>	<b>.353</b>	<b>.8922</b>
Q1PE	Instructors should be well dressed and appear neat.	.3479	.506	.9259
Q2PE	Materials associated with the services of instructors (such as handouts and course outlines) should be visually appealing and easy to understand.	.4387	.460	.9249
Q3PE	Instructors should wear uniform.	.2220	.488	.9276
Q4PE	Physical facilities being used by instructors (such as class room, uniform, duster, folder, chalk, etc) should be visually appealing.	.2467	.485	.9270
<b>Reliability</b>		<b>.7233</b>	<b>.672</b>	<b>.8575</b>
Q5PE	Instructors should apply the same standard of marking and grading to all students taking same subject.	.3955	.551	.9259
Q6PE	Instructors should provide their services at the time they promise to do so.	.5849	.503	.9227
Q7PE	Instructors' assessment should be accurate, fair and reliable.	.5956	.602	.9226
Q8PE	Instructors should keep accurate (i.e., error-free) students' records.	.5812	.626	.9228
Q9PE	Instructors should perform their services 'right the first time' (i.e., should provide zero-defect services).	.5976	.519	.9226
<b>Responsiveness</b>		<b>.7221</b>	<b>.673</b>	<b>.8575</b>
Q10PE	Instructors should give prompt/timely service to students.	.5901	.595	.9226
Q11PE	Instructors should be consistently courteous/polite and willing to help students.	.6045	.628	.9225
Q12PE	Instructors should not appear aloof/distant or too busy to respond to students' requests.	.4496	.343	.9251
Q13PE	Instructors should tell students exactly when services will be performed.	.6321	.555	.9222
<b>Assurance</b>		<b>.7403</b>	<b>.687</b>	<b>.8544</b>
Q14PE	Instructors should offer students a range of support services such as feed backs on assignments, quizzes, tests, and exams.	.4329	.717	.9250
Q15PE	Instructors should teach the knowledge and skills needed to get good results, both academically and for employment.	.6009	.535	.9225
Q16PE	Instructors should instill/inspire confidence in students.	.7007	.663	.9210
Q17PE	Instructors should make students' feel safe, secure, and comfortable in their transactions.	.5576	.524	.9232
<b>Empathy</b>		<b>.7812</b>	<b>.740</b>	<b>.8469</b>
Q18PE	Instructors should understand the difficulties facing students.	.7410	.665	.9200
Q19PE	Instructors should give an individual/personal attention to the specific needs of their students.	.5400	.574	.9234
Q20PE	Instructors should give useful advice during registration, senior paper, subject related, etc.	.5394	.438	.9235
Q21PE	Instructors should have students' best interest at heart (i.e., should have positive service attitude towards students).	.6323	.611	.9220
Q22PE	Instructors should have class times and office hours convenient to their students.	.6029	.561	.9224
<b>Outcome</b>		<b>.7202</b>	<b>.665</b>	<b>.8588</b>
Q23PE	Students should be confident that the time, effort, and money they spend on this education worth it (i.e., it has value for money).	.6506	.592	.9216
Q24PE	Students should be satisfied with their intellectual development at this education.	.6635	.727	.9215
Q25PE	Students should perform well academically as they anticipated they would.	.6502	.687	.9217
Q26PE	Students should be proud of their accomplishments at this education.	.5999	.636	.9225

Extraction Method: Principal Component Analysis.

Alpha for all items = .9260; N of Cases = 287.0; N of Items = 26

Alpha for all dimensions = .8827; N of Cases = 287.0; N of Items = 6

Where Q1PE= the mean difference between Q1 perception and Q1 Expectation.

Thus, all the quality items and dimensions above are maintained, although the lower factor load (<0.4) and the lower item-to-total correlation coefficient values (<0.50) showed it didn't fit as good as the others. Therefore, the factor analysis as well as the reliability tests proved that (a) the sample was adequate, (b) the factors were loaded high, (c) there was strong correlation among the variables and (d) there was strong internal consistency among the constructs. This indicated that the variables in the quality model were fit to measure the students' academic staff service perceptions and hence hypothesis testing can be carried on.

**HYPOTHESES TESTING**

**H1: There are no significant mean differences between expectations and perceptions regarding the quality dimensions. [Paired- Samples T Test]**

$$S = \sum_{j=1}^k (P_{ij} - E_{ij})$$

Where,

S = Overall service satisfaction; k= number of attributes.

$P_{ij}$  = Performance perception of stimulus  $i$  with respect to attribute  $j$ .  
 $E_{ij}$  = Service quality expectation for attribute  $j$  that is the relevant norm for stimulus  $i$ .

TABLE 4: PAIRED SAMPLES TEST

		Paired Differences					Sig. (2-tailed)
		Mean Differ.	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	Q1E - Q1P	.79	1.469	.087	.62	.96	.000
Pair 2	Q2E - Q2P	1.45	1.795	.106	1.24	1.66	.000
Pair 3	Q3E - Q3P	1.16	1.637	.097	.97	1.35	.000
Pair 4	Q4E - Q4P	1.16	1.418	.084	1.00	1.33	.000
Pair 5	Q5E - Q5P	1.91	2.107	.124	1.66	2.15	.000
Pair 6	Q6E - Q6P	2.00	1.931	.114	1.78	2.22	.000
Pair 7	Q7E - Q7P	1.62	1.785	.105	1.41	1.83	.000
Pair 8	Q8E - Q8P	1.72	2.002	.118	1.49	1.95	.000
Pair 9	Q9E - Q9P	1.50	1.772	.105	1.30	1.71	.000
Pair 10	Q10E - Q10P	2.06	2.031	.120	1.82	2.30	.000
Pair 11	Q11E - Q11P	1.69	1.775	.105	1.48	1.90	.000
Pair 12	Q12E - Q12P	1.67	2.168	.128	1.41	1.92	.000
Pair 13	Q13E - Q13P	1.62	1.681	.099	1.42	1.81	.000
Pair 14	Q14E - Q14P	2.15	1.838	.108	1.93	2.36	.000
Pair 15	Q15E - Q15P	2.21	1.862	.110	2.00	2.43	.000
Pair 16	Q16E - Q16P	1.67	1.831	.108	1.46	1.89	.000
Pair 17	Q17E - Q17P	1.85	2.020	.119	1.61	2.08	.000
Pair 18	Q18E - Q18P	2.13	2.058	.121	1.89	2.36	.000
Pair 19	Q19E - Q19P	2.25	1.995	.118	2.02	2.49	.000
Pair 20	Q20E - Q20P	2.23	2.123	.125	1.99	2.48	.000
Pair 21	Q21E - Q21P	1.97	1.926	.114	1.74	2.19	.000
Pair 22	Q22E - Q22P	1.99	2.028	.120	1.76	2.23	.000
Pair 23	Q23E - Q23P	1.76	2.016	.119	1.53	1.99	.000
Pair 24	Q24E - Q24P	1.75	1.888	.111	1.53	1.97	.000
Pair 25	Q25E - Q25P	1.52	1.881	.111	1.30	1.73	.000
Pair 26	Q26E - Q26P	1.61	1.838	.108	1.40	1.83	.000

Mean of Students Overall Satisfaction = 4.15 on a 7-rating scale.

The Paired Sample t-test indicated that there was significant difference on each paired test between students' service expectations and perceptions (i.e., Expectation – Perception). The significance test also demonstrated that there was a statistically significant difference at 95% confidence interval for difference of means of paired statements at  $P < .05$ . It means the difference that occurred between the students' expectations and perceptions was greater than would be expected by chance.

Therefore, the paired-samples t-test **rejected the hypothesis** because there was significant difference between respondents' expectation and perception at  $p < 0.05$ . For each statement in the service quality dimension, the perceived service quality was found to be significantly below the expected service quality.

**H2: The service quality dimensions are not significant predictors of customers' overall satisfaction. [Multiple Regression Analysis]**

$$S = \alpha + \beta_1 (T) + \beta_2 (RI) + \beta_3 (Rs) + \beta_4 (A) + \beta_5 (E) + \beta_6 (O) + e_t$$

Where S = overall satisfaction

$\alpha$  = Constant;  $\beta_i$  = Coefficient of the dimensions of quality  
 T = Tangible; RI = Reliability; Rs = Responsiveness; A = Assurance;  
 E = Empathy; O = Outcome;  $e_t$  = Error term

TABLE 6: MODEL SUMMARY (b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.701(a)	.491	.480	.00364

<sup>a</sup> Predictors: (Constant), OUTCMEAN, TANMEPE, RELMEPE, RESMEPE, ASSMEPE, EMPMEPE

<sup>b</sup> Dependent Variable: OSMEAN

Where OSMEAN = Mean of Overall Satisfaction; TANMEPE = Mean difference of Tangible's expectation and perception, RELMEPE = Mean difference of Reliability's expectation and perception, RESMEPE = Mean difference of Responsiveness's expectation and perception, ASSMEPE = Mean difference of Assurance's expectation and perception, EMPMEPE = Mean difference of Empathy's expectation and perception; OUTCMEPE = Mean difference of Outcome's expectation and perception.

The multiple correlation coefficients (R) large value (0.701) indicates a strong relationship among the six service quality dimensions and the students' perceived overall satisfaction and. the coefficient of determination (R Square) 0.491 shows about half the variation in the students perceived overall satisfaction was explained by the model. Therefore, the model summary **rejected the hypothesis** because the service quality dimensions were the predictors of the students' overall academic staff service satisfaction.

TABLE 7: COEFFICIENTS (a)

Model		Standardized Coefficients	Collinearity Statistics			t	Sig.	Correlations		
			Tolerance	VIF	Condition Index (CI)			Zero-order	Partial	Part
1	(Constant)	Beta				1.001	.318			
	TANMEPE	.063	.624	1.602	10.126	1.171	.243	.420	.070	.050
	RELMEPE	.007	.385	2.596	12.591	.096	.924	.480	.006	.004
	RESMEPE	-.069	.367	2.723	16.808	-.987	.324	.469	-.059	-.042
	ASSMEPE	.352	.382	2.615	17.969	5.106	.000	.654	.292	.218
	EMPMEPE	.248	.319	3.138	18.840	3.278	.001	.601	.192	.140
	OUTCMEPE	.187	.358	2.790	21.373	2.621	.009	.613	.155	.112

<sup>a</sup> Dependent Variable: OSMEAN

The coefficients table reveals that there were many predictors in the model. There were also non-significant coefficients (i.e., for tangible, reliability, and responsiveness at  $p < 0.05$ ) indicating that these quality dimensions did not contribute much to the model (students perceived overall satisfaction). Therefore, the collinearity problem was fixed by using step-wise linear regression analysis in order to identify only the most useful predictor variables in the model as follows:

TABLE 9: COLLINEARITY DIAGNOSTICS (d)

Model		Collinearity Statistics		
		Tolerance	VIF	Condition Index (CI)
1	(Constant) <sup>a</sup>			1.000
	ASSMEPE	1.000	1.000	6.761
2	(Constant) <sup>b</sup>			1.000
	ASSMEPE	.520	1.922	7.435
	EMPMEPE	.520	1.922	10.344
3	(Constant) <sup>c</sup>			1.000
	ASSMEPE	.389	2.568	8.430
	EMPMEPE	.456	2.195	11.387
	OUTCMEPE	.400	2.500	13.308

<sup>a</sup> Predictors: (Constant), ASSMEPE

<sup>b</sup> Predictors: (Constant), ASSMEPE, EMPMEPE

<sup>c</sup> Predictors: (Constant), ASSMEPE, EMPMEPE, OUTCMEPE

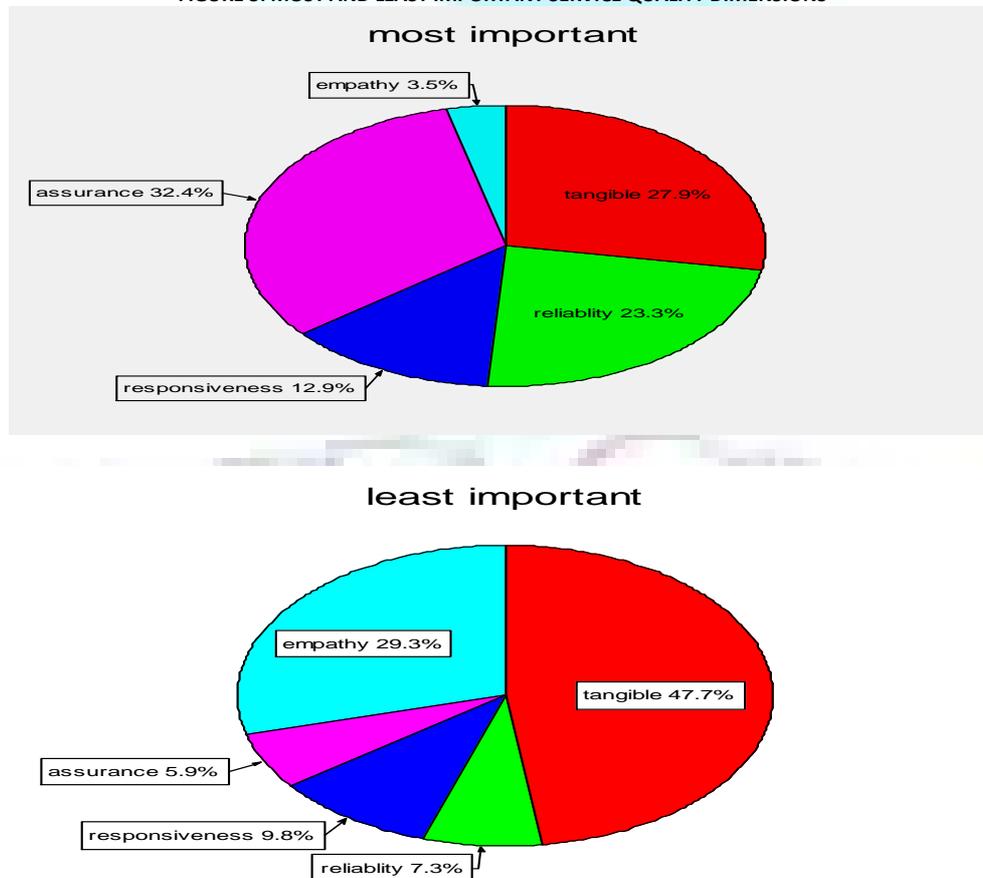
<sup>d</sup> Dependent Variable: OSMEAN

The step-wise linear regression analysis chosen assurance, empathy, and outcome as the three quality dimensions that were significant predictors of students' perceived overall satisfaction. There is no problem with multicollinearity: all of the VIF indices are less than 10, the condition indices (CI) are less than 15 and the tolerances are improved. The model built using stepwise methods did not have problems with collinearity (Bedi, 2004; Kwan and Ng, 1999).

TABLE 10: DESCRIPTIVE STATISTICS

	N	Mean
R1	287	15.31
R2	287	21.38
R3	287	19.37
R4	287	24.38
R5	287	19.77
Valid N (list wise)	287	

FIGURE 3: MOST AND LEAST IMPORTANT SERVICE QUALITY DIMENSIONS



Students ranked and rated assurance as the most important and tangible as the least important dimensions for evaluating their academic staff service perceptions.

H3: There is no significant impact of customers overall satisfaction on the propensity to recommend the FBE to others. [Pearson's correlation]

$$PWW = \alpha + \beta_1(S) + e_t$$

Where, PWM = Positive Word of Mouth; S = overall satisfaction;  $\alpha$  = Constant;  $\beta_1$  = Coefficient of the overall satisfaction;  $e_t$  = Error term

TABLE 11: CORRELATIONS

		OVERALL SATISFACTION	WORD of MOUTH
OVERALL SATISFACTION	Pearson Correlation	1	.777(**)
	Sig. (2-tailed)	.	.000
	N	287	287

\*\* Correlation is significant at the 0.01 level (2-tailed).

The correlations coefficient (0.777) showed that the overall satisfaction had significant positive impact on students' propensity to recommend the CBE to others at  $p < 0.01$ . Thus, the hypothesis is rejected.

**H4: There is no significant impact of customers overall satisfaction on switching intention from the FBE. [Pearson's correlation]**

$$L = \alpha + \beta_1(S) + e_t$$

Where, L = Loyalty; S = overall satisfaction;  $\alpha$  = Constant;  $\beta_1$  = Coefficient of the overall satisfaction;  $e_t$  = Error term

TABLE 12: CORRELATIONS

		OVERALL SATISFACTION	LOYALTY
OVERALL SATISFACTION	Pearson Correlation	1	.700(**)
	Sig. (2-tailed)	.	.000
	N	287	287

\*\* Correlation is significant at the 0.01 level (2-tailed).

The correlations coefficient (0.700) showed that the overall satisfaction had significant positive impact on students' switching intention, when ever possibilities, to other higher learning institutions at  $p < 0.01$ . Thus, the hypothesis is rejected.

### CONCLUSIONS AND RECOMMENDATIONS

The test of goodness of data (i.e., the correlation, reliability, and factor analysis) demonstrated that the data collected were reliable and valid: (1) the Pearson's correlation coefficient showed a significant correlation among the SERVQUAL quality dimensions, (2) the Cronbach's alpha exhibited desirable levels of internal consistency among the quality statements (i.e.,  $> 0.50$ ), and (3) the factor analysis revealed that, with few exceptions, most of the items assigned to each quality dimension had high loadings (i.e.,  $> 0.40$ ). Thus, the service quality instrument can be successfully used to assess the magnitude of the gap between students' academic staff service expectations and perceptions.

The current study sought to measure the College of Business and Economics (CBE) students' academic staff services expectations and perceptions in relation to **functional quality** (i.e., tangible, reliability, responsiveness, assurance, and empathy) and **technical quality** (i.e., outcome). Accordingly, the following results emerged from the study.

Although it is natural for students to expect excellent academic staff services, the significant mean differences between students' expectations and perceptions spelled that students did not get the expected services, i.e., the CBE did not perform well from the students' perception point of view. The paired-samples t-test indicated that students' perceptions significantly fell below their expectations. The mean differences between expectations and perceptions ranged from 0.79 to 2.25. Except one, all perception statements fell below expectation by at least 1.16.

Among the quality statements that were most expected but least performed (i.e., Expectation - Perception  $\geq 2.0$ ) were:

1. Instructors should understand the difficulties facing students.
2. Instructors should give an individual/personal attention to the specific needs of their students.
3. Instructors should give useful advice during registration, and senior paper.
4. Instructors should provide their services at the time they promise to do.
5. Instructors should give prompt/timely services to students.
6. Instructors should offer students a range of support services such as feedback on assignments, quizzes, tests, and exams.
7. Instructors should teach the knowledge and skills needed to get results, both academically and for employment.

The study also revealed that the mean value of the students' overall satisfaction was 4.15 on a seven-rating scale.

The Pearson's correlation coefficient showed a significant positive relationship between the six quality dimensions (tangible, reliability, responsiveness, assurance, empathy, and outcome) and the students' overall service satisfaction. It means these quality dimensions had significant impact on perception of overall service satisfaction. Thus, the model was fit to measure students' academic staff service satisfaction level. Besides, step-wise linear regression analysis (Multiple Regression Analysis) identified assurance, empathy, and outcome dimensions as the most predictors of the students' overall academic staff service satisfaction.

The Pearson's correlation coefficient also pointed up a significant positive relationship between students' overall service satisfaction and the students' propensity to recommend the FBE to others and students' switching intention to others. It means improving students overall service leads to positive word of mouth and loyalty to the FBE.

While rating the most and least important dimension, students rated assurance as the most important and tangible as the least important, i.e., students were considered tangible dimension least when appraising their academic staff service satisfaction.

This study results are consistent with prior research findings: (1) the paired-samples t-test revealed that students' expected more than what they perceived the academic staff would provide, (2) tangible was less important in assessing academic staffs service and did not influence students service satisfaction as good as the rest, and (3) assurance, empathy, and outcome were pointed out as the most predictors of students' academic staff service perceptions (Chua, 2004; Darlaston-Jones et al., 2003; Faganel and Macur, 2003/04; Pariseau and McDaniel, 1997; Sherry et al., 2003; Soutar and McNeil, 1996).

The study endorsed that there is direct relationships between service quality perception and the functional and technical quality dimensions; and the service quality leads to students' academic staff service satisfaction. The students' academic staff service quality assessment provided vital information. A great deal can be learned just from examining the service quality scores: expectation, perception, and mean difference between expectation and perception for the corresponding quality statements. Mean differences for each quality statement was computed. The study provided direct feedback on specific aspects of the academic staff's service qualities. There was a significant mean difference between students' service expectations and perceptions. The service perceptions fell significantly below expectation. This service gap can be used as a stepping stone to undergo service improvements.

The study also supported that academic staff service quality shall be assessed by the students. Although student assessments may not always reflect reality, they help determine important outcomes such as student participation in the classroom, involvement in extracurricular activities, and the image of the school that student carry with themselves upon graduation. Zeithaml and Bitner (1996) discussed how students assess educational quality. They stated that most students are in School to learn what they do not know. However, not knowing the subjects they are studying does not prevent them from making judgments about their professors. Cues such as the tangibles that accompany the service (overheads and other presentation materials), the professor's appearance of nervousness, the degree of confidence communicated, or even whether the professor starts and ends class on time, are used to infer competence.

Moreover, student perceptions of their academic staff significantly affect the manner in which students approach their school work. Student perceptions of academic staff's reliability, trustfulness, and communication have been found to affect student compliance and cooperation with academic staff class

assignments (Holdford and Wright, 1997). If one takes the view that education is a cooperative venture between students and academic staff, then understanding student perceptions of their academic staff may permit strategies to enhance student participation in their learning.

As competition for students has been escalating among colleges and universities (especially for the summer, evening, and distance programs) to generate an internal revenue, student retention has received increased attention. Since service quality and student satisfaction are important factors in retention, it is important that the FBE measure service quality and strive for continuous improvement; quality is what our students tell us it is, not what we say it is. Progress can only be determined and improved by measurement.

Furthermore, the importance of these findings for managerial decision-making process is evident. Faculty managers seeking to improve their students' loyalty levels, in their effort to increase retention rates and attract new students through Word of Mouth (WOM), may benefit by information about the effects of individual dimensions of service quality on student service satisfaction and of the latter on loyalty. They may also benefit from the use of SERVQUAL for measuring the quality of services offered by their academic staff for discovering possible service quality flaws and/or benchmarking. The longitudinal use (i.e., periodic assessment) of such quality assessment to monitor the progression in time of their students' service quality perceptions will help them to take necessary measures for continuous service improvements. Faculty managers must also take into account that students gave less importance for the tangible elements in assessing their level of academic staff service satisfaction and, hence, primarily direct their efforts and resources towards improving the assurance, empathy and outcome, i.e., the human element, rather than the tangible element of their academic services.

Finally, the study was a snap shot of the CBE academic staff's service performance at a distinct time, i.e., 2009/10 academic year. Review of various service quality models revealed that the service quality outcome and measurement is dependent on the type of service setting, situation, time, need, etc factors. In addition to this even the customer's expectations towards particular services are also changing with respect to factors like time, increase in the number of encounters with a particular service, competitive environment, etc (Seth et al., 2005). Thus, it is recommended that the study be repeated from time to time, for example on semester basis, for continuous service improvement through cooperative venture between students and academic staff. Such synergetic attempt will help to identify necessary logistics, training, and empowerment needed by the academic staff for offering satisfactory services. In addition, the study be repeated on periodic basis (1) in order to show continuous service accountability and compare students' service expectations and perceptions so that to identify the service gaps to work for service improvements and enhancement and (2) in order to track performance and to determine whether changes made have been successful in improving service quality.

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**MANPOWER REQUIREMENT OF MANUFACTURING INDUSTRIES: INPUT TO CURRICULUM DEVELOPMENT****MA. TEODORA E. GUTIERREZ****ASST. PROFESSOR****INDUSTRIAL ENGINEERING DEPARTMENT****TECHNOLOGICAL INSTITUTE OF THE PHILIPPINES – QUEZON CITY****938 AURORA BLVD., CUBAO, QUEZON CITY****PHILIPPINES****ABSTRACT**

*This study seeks to know the priority competency skills of manufacturing industries for an entry-level engineering job. Priority matrix index were used in gathering information from the target respondents. There were thirty-two respondents in the study, twelve Human Resource Managers and twenty Industrial Engineering Managers/Practitioners from the thirty-two manufacturing firms in the National Capital Region, Philippines. The resulted top six priority competency skills of the manufacturing industries are: 1. Leadership Skills, 2. Ability to see Big-pictures, 3. Problem Solving Skills, 4. Organization Understanding, 5. Coping Skills and 6. Technological Awareness and Understanding. Correlation analysis among the different competency skills was also conducted using statistics software called SPSS version 14. The correlation analysis reflected that problem solving skills and leadership skills as independent variables and the dependent variables are performance understanding, ability to see the big picture, systems thinking and understanding, and technological awareness. The identified priority skills were validated by the human resource manager of a top multinational company. Then, a self-assessment of the Industrial Engineering curriculum program in relation to the resulted industry priority skills was conducted which resulted to a skill gap analysis. Suggested actions were then identified in order to close the gap. Finally, the implication of this research will serve as benchmark in assessing other engineering curriculum of University X in order to increase the employability of the graduates.*

**KEYWORDS**

Competency Skills, Correlation Analysis, Manpower Requirements

**INTRODUCTION**

A recent survey showed that there is a mismatch on the skills demanded by the industries to the available supply skills. The results of the survey revealed that “31 percent of employers worldwide are having difficulty filling positions due to the lack of suitable talent available in their markets, which is an increase of one percentage point over last year’s survey” ( Bizshifts, 2010 ). Moreover, engineers ranked number 4 on the top 10 jobs that employers are having difficulty filling across the 36 countries and territories. Existing literature conducted several studies about competency skills of engineering graduates. Benschah et al (2011) paper developed functional competency for chemical engineering graduates in close collaboration with personnel in industry. Moreover, the paper describes a methodology in constructing a competency based training modules for undergraduate chemical engineering course. Because it’s current engineering education are seen to be deficient in meeting the expectations of the industry to the graduates. Likewise, Warin et al (2011) proposed a methodological framework that enables the course modules to evolve in order to integrate high levels of cognitive skills and professional competencies. The motivation of the framework is based on the goal of aligning the student learning into the workplace realities. The framework is based on seven basic principles that are inclined in an outcome based approach instruction. The proposed framework was applied in three modules, one in the undergraduate course and two in the graduate course. The study found out that the proposed framework is useful in improving teaching scenarios which lead to improving course modules. On the other hand, Goel (2006) in his study collates recommendations about competency skills of engineering graduates from National Academy Engineers (NAE) , Engineering Professor’s Council (EPC) ,several authors in the literature and other accreditation agencies. The study noted that the mentioned agencies identified a large number of competencies such as systems level perspective, analytical skills, critical and creative thinking as essential. In the end, the study concluded by proposing a three dimensional taxonomy of competencies such as dimension#1- attitudes and perceptions; dimension#2- Productive habits of mind; dimension#3-meaningful usage , extension and acquisition of knowledge.

Given this phenomena, there is a need to evaluate the required competency skills of employers in order that the supplier which are the Higher Education Institute (HEI) be able to match and address this needs. It is therefore the aim of the study to identify and assess the demand of the manufacturing industries in terms of the required job skills for an entry level engineer. The result and information gathered will aid Higher Education Institute (HEIs) to further evaluate and develop their curriculum in meeting the industries’ manpower requirements. Furthermore, this study will help the students in evaluating their existing capabilities and identify their areas of improvement to make them more competitive and have full competence in their field of study.

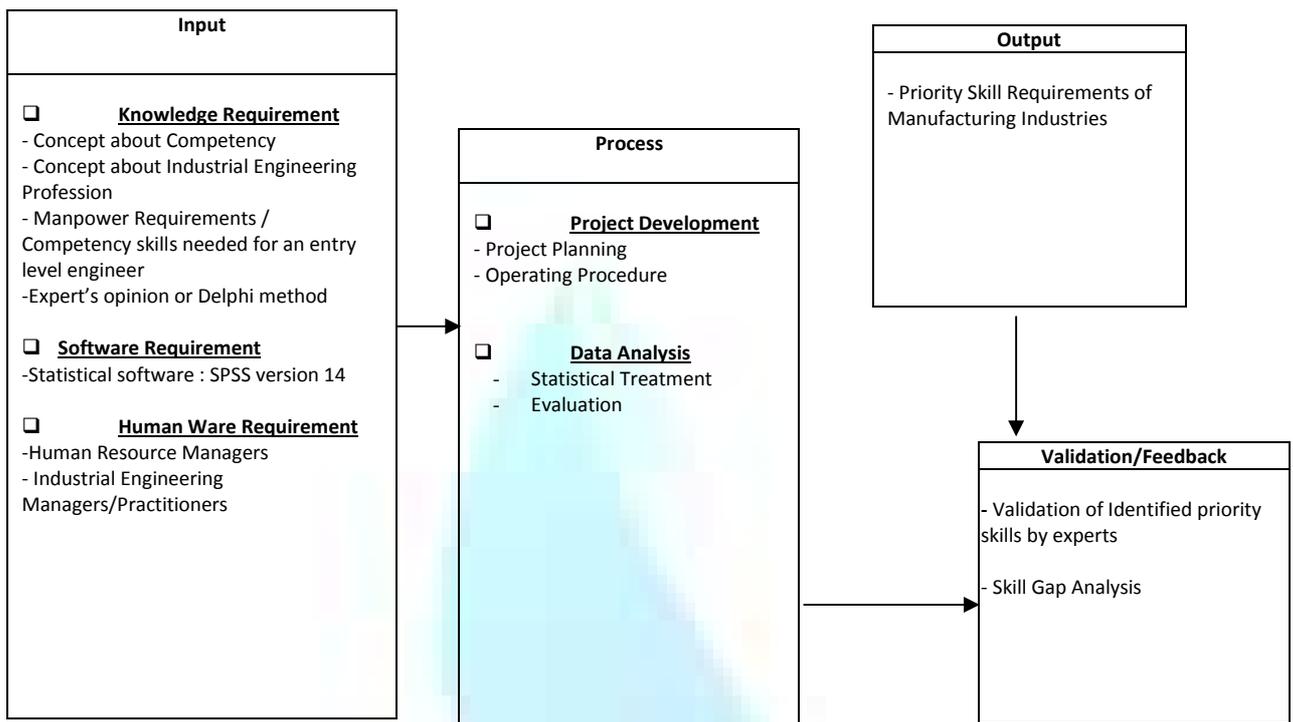
**OBJECTIVES OF THE STUDY**

1. Determine the competency skills needed for an entry-level engineer in manufacturing industries.
2. Identify the priority competency skills needed for an entry-level engineer in manufacturing industries.
3. Evaluate the interrelationship of these skills.
4. Evaluate existing Industrial Engineering program curriculum offered by University X.

**SCOPE AND DELIMITATION**

The study will focus on the required competency skills of an entry-level engineer.

FIGURE 1 - CONCEPTUAL FRAMEWORK



Source: results of author’s concepts and analysis in the literature and empirical studies

The above figure shows the conceptual framework of the study. Understanding the concepts of competency, industrial engineering profession, industries’ manpower requirements and the knowledge of the use of delphi method are essentials in achieving the required output of the study. Statistical software named as SPSS version14 will be needed for treatment of the collected data and to evaluate significant relationship of the different competency skills. The survey returns from the target respondents particularly the Human Resource Managers and the Industrial Engineering Managers/Practitioners is also an input to the study.

After input, project development follows; the planning of the project began when the short listed competency skills were chosen from the standard established by the American Society of Training and Development for Human Performance Improvement: Roles, Competencies and Outputs by Rothwell (1999). Then, operating procedures follows, where survey questionnaires were randomly distributed to the different manufacturing firms. The data gathered from the survey questionnaires were tallied with the use of SPSS version14. The final output is the priority skills requirements of manufacturing industries. The human resource manager and industrial engineering manager from top multinational company validated the resulted priority competency skills. Lastly, skill gap analysis was conducted through the evaluation of the industrial engineering program curriculum as against the identified priority skills requirements.

**METHODOLOGY**

This study used qualitative and quantitative method in achieving the objective of the study. In qualitative method, delphi method or expert's opinion were used through survey questionnaire. Mean of the total score for each competency skills were calculated from the responses of the respondents and Pearson r coefficient was used to determine the significant relationship of the different variables in the study.

The respondents are either the Human Resource Manager or Industrial Engineering Manager/Practitioner. The 15 competency skills in the survey questionnaire were taken from ‘ASTD Models for Human Performance Improvement: Roles, Competencies, and Outputs’ by William J. Rothwell (1999) because it covers all the skills needed for an entry-level candidate as validated in several related studies. The identified competency skills are as follows: Industry Awareness, Leadership Skills, Interpersonal Relationship Skills, Technological Awareness and Understanding, Problem-Solving Skills, Systems Thinking and Understanding, Performance Understanding, Knowledge of Interventions, Organization Understanding, Negotiating/Contracting Skills, Buy-in/Advocacy Skills, Coping Skills, Ability to See “Big Picture, Consulting Skills. These competency skills will be used as the content of the survey questionnaire of the study.

**PROCEDURE**

The respondents were instructed to apply pairwise comparison in identifying their preferred competency skills. The instruction in entering the data in the questionnaire is shown below:

Competency Skills	Leadership Skills	Problem Solving Skills	Business Understanding	Technological Understanding	Total Score
Leadership Skills	X	0	0	0	0
Problem Solving Skills	1	X	1	1	3
Business Understanding	1	0	X	1	2
Technological Understanding	1	0	0	X	1

Compare each of the skills and write 1 in the row of the chosen skill. And write 0 in the assigned row of the un-prefer skills. For example in the above table the respondent preferred problem solving skills more than leadership skills in hiring entry level engineers, hence the value of 1 was reflected in the second row of the first column. This cell (C21) is the intersection of problem solving skills and leadership skills. Then, write the value of 0 to the first row second column (C12) of the table. The computation of score is horizontal. The respondent will continue in the next cell until he fills up all the cells in the table. The resulted score of the example reflected that problem solving skills is the respondent’s top most priority since this got the highest score, followed by business understanding, then technological understanding and last is leadership skills.

## STATISTICAL TREATMENT OF DATA

Descriptive Statistics was used such as the measurement of central tendency of each competency skills. Correlation analyses among the competency skills were also computed using Pearson r.

## RESULTS

The primary purpose of this study was to determine, in rank of order of importance, the competency skills/employability skills that employers in manufacturing industry seek in entry-level engineering jobs. The respondents of the study are the twelve ( 12 ) Human Resource Officers and twenty Industrial Engineering Managers/Practitioners from the thirty two different manufacturing industries. The total average workforce of the responded manufacturing firm has 688 workers.

## RANKING OF COMPETENCY SKILLS

The survey questionnaire returns from the different manufacturing companies within the National Capital Region (NCR) resulted in the following ranking.

TABLE 2 - RANKING OF COMPETENCY SKILLS

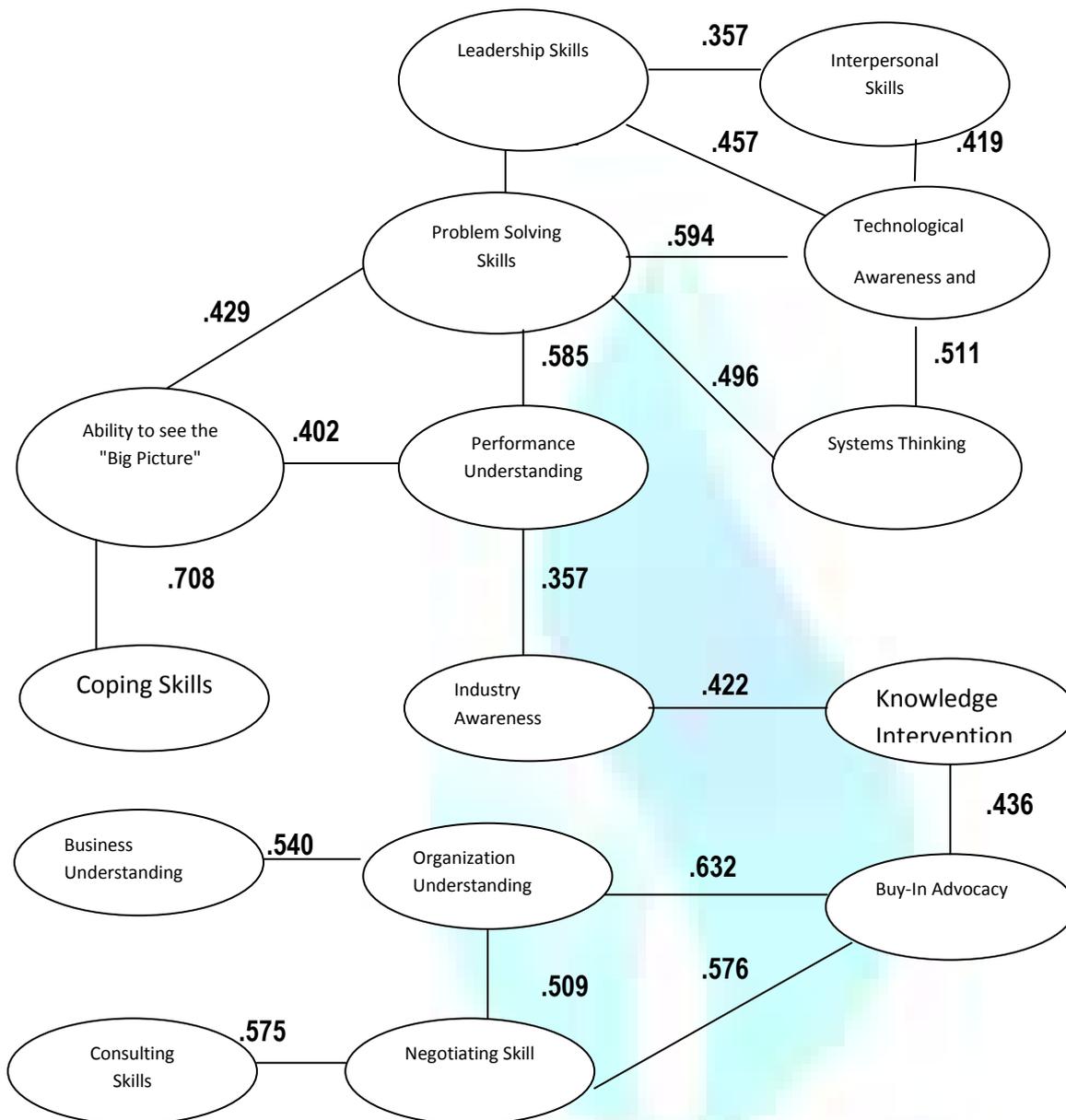
Rank	Ranking From All Respondents	Score	Ranking From Human Resource Manager	Score	Ranking From Industrial Engineer Manager/ Practitioner	Score
1	Leadership Skills	329	Leadership Skills	133	Technological Awareness and Understanding	200
2	Ability to see" Big pictures:"	327	Ability to see" Big pictures:"	128	Ability to see" Big pictures:"	199
3	Problem Solving Skills	324	Problem Solving Skills	126	Organization Understanding	199
4	Organization Understanding	319	.Business Understanding	125	Problem Solving Skills	198
5	Coping Skills	315	Coping Skills	123	Leadership Skills	196
6	Technological Awareness and Understanding	310	Organization Understanding	120	Coping Skills	192
7	Systems Thinking and Understanding	304	Interpersonal Relationship Skills	119	Systems Thinking and Understanding	191
8	.Business Understanding	298	Systems Thinking and Understanding	113	Knowledge of intervention	185
9	Interpersonal Relationship Skills	296	Industry Awareness	112	Buy-In/Advocacy Skills	182
10	Knowledge of intervention	295	Negotiatings/Contracting Skills	111	Negotiatings/Contracting Skills	181
Rank	Ranking From All Respondents	Score	Ranking From Human Resource Manager	Score	Ranking From Industrial Engineer Manager/ Practitioner	Score
11	Negotiating/Contracting Skills	292	Technological Awareness and Understanding	110	Consulting Skills	179
12	Industry Awareness	282	Knowledge of intervention	110	Interpersonal Relationship Skills	177
13	Buy-In/Advocacy Skills	279	Performance Understanding	104	Performance Understanding	174
14	Performance Understanding	278	Consulting Skills	99	.Business Understanding	173
15	Consulting Skills	278	Buy-In/Advocacy Skills	97	Industry Awareness	170

Source of data: result of pairwise comparison of the different competency skill

Table 2 shows that Leadership skills was the top priority skills in manufacturing industries for an entry level Industrial Engineer as ranked by all respondents and by the Human Resource Officer/Manager. The skill is defined as "knowing how to lead or influence others positively to achieve desired work". Hence, Industrial Engineer should be a good motivator since they are the one who will direct and encourage the workers to achieve the target output or production units of the manufacturing company. On the other hand, technological awareness was the priority skill of an Industrial Engineering Manager/ Practitioner. This skill is defined as "the knowledge and use of existing or new technology and different types of software and hardware; understanding performance support systems and applying them as appropriate" (Rothwell, 1999). This reflected that an entry-level industrial engineers will be exposed and require to use software technology in doing their job.

In summary, the top five competency skills are: Leadership Skills, Ability to see the big picture, problem-solving skills, organization understanding and coping skills. The ability to see the big picture means that IE should look beyond details in order to see overarching goals and results. Every organization now a day has vision and mission statement, this enable the company to strategically position their company in the market. Hence, all the works and activities of Industrial Engineers should be aligned to the vision and mission of the company. Another top ranked skill is problem solving skills. Detecting performance gaps and helping other people to discover ways to close the performance gaps in the present and future, furthermore it is also about closing performance gaps between actual and ideal. IE should detect problems in their workplace and be able to solve them by closing the gap between what should be done and what have been done. This problem solving skills is manifested by the quantitative skills of IE such as statistical quality control, forecasting, and inventory management, operation research and others. Understanding the organization is another top ranked skills, IE should view the larger perspective of the organization as framework for understanding and influencing events and change. Coping skills is another top ranked skill which mean knowing how to deal with ambiguity and how to handle stress resulting from change. Change is inevitable, customer always asked for more and better service. In effect, the company should cope with the changing environment in order to survive, likewise, individual and employees should also adapt to the changing environment to become competitive.

FIGURE 3 - RELATIONSHIP DIAGRAM OF THE DIFFERENT COMPETENCY SKILLS



Source: Result of interrelationship of the different competency skills using SPSS version 14

Figure 3 shows the significant relationship of the different competency skills. Leadership skills have significant relationship to problem solving skills with Pearson coefficient of 0.594. It means that the ability to lead and guide the workers also has the ability to close the performance gap of the workers. Moreover, technological awareness and understanding has significant relationship to problem solving skills (  $r = 0.594$ ) and leadership skills (  $r = 0.457$ ). The higher the knowledge of use in technology the better it will contribute to close the performance gap and lead the worker. On the other hand, Interpersonal skills has significant relationship with leadership skills (  $r = 0.357$ ) and technological awareness and understanding (  $r = 0.419$ ). It reflected that working effectively with others would contribute in leading the workers while understanding the performance support system of the organization. Having a problem solving skills will help Industrial Engineers to understand performance of the organization(  $r = 0.585$ ).They be able to distinguish between the activities and results, recognize their implications, outcomes and consequences in the organization. Problem solving skills will help IE identify inputs, throughputs and outputs of system and subsystem(  $r = 0.496$ ).This in effect will improve human performance. Ability to look beyond details to see the overarching goals and results will help IE to cope and deal with ambiguity (  $r = 0.708$ ). Understanding the vision, strategy goals and culture of the company has a significant relationship with performance understanding (  $r = 0.357$ ) and knowledge intervention (  $r = 0.422$ ). Understanding the larger perspective of the organization's setting such as its political, economic and social system with multiple goals has significant relationship with the awareness of inner workings of business function and how business decisions affect the financial and non-financial work results( Organization understanding to Business understanding ,  $r = 0.540$ ). Moreover, understanding the results that stakeholders desire form a process and evaluating the works performed by vendors or outsourcing agents has significant relationship(Consulting Skill to Negotiating Skills ,  $r = 0.575$ ). And lastly, Building ownership or support for change among affected individuals, and other stakeholders will enhance the skill of Organization Understanding (  $r = 0.632$ ) and Negotiating Skills (  $r = 0.509$ ).

**VALIDATION OF THE RESULTED PRIORITY COMPETENCY SKILLS OF THE RESPONDENTS**

The resulted priority competency skills were validated through the comparison of the response of a top multinational company. The survey questionnaire filled-up by the company's Human Resource Manager reflected similar priority competency skills as against the respondents' identified competency skills (see table 3).

TABLE 3 – VALIDATION OF THE IDENTIFIED PRIORITY COMPETENCY SKILLS

Respondents' identified priority competency skills	Identified competency skills from a top multi-national company
1. Leadership Skills	1. Leadership Skills
2. Ability to see "Big pictures:"	2. Technological Awareness and Understanding
3. Problem Solving Skills	3. Problem Solving Skills
4. Organization Understanding	4. Ability to see "Big pictures:"
5. Coping Skills	5. Coping Skills
6. Technological Awareness and Understanding	6. Business Understanding
7. Systems Thinking and Understanding	7. Interpersonal Relationship Skills
8. Business Understanding	8. Organization Understanding
9. Interpersonal Relationship Skills	9. Systems Thinking and Understanding
10. Knowledge of intervention	10. Performance Understanding
11. Negotiating/Contracting Skills	11. Industry Awareness
12. Industry Awareness	12. Knowledge of intervention
13. Buy-In/Advocacy Skills	13. Consulting Skills
14. Performance Understanding	14. Buy-In/Advocacy Skills
15. Consulting Skills	15. Negotiating/Contracting Skills

As shown in the above table, it is interesting to note that they have similar ranking for the several competency skills such as leadership skills (i.e., rank no#1), "problem solving skills" (i.e., rank no#3) and "coping skills" (i.e., rank no#5). Other skills such as "technological awareness and understanding" and "ability to see the big pictures" are within the top six of both the respondents and valuator, which implies that the identified priority skills of the respondents are indeed the skills needed by manufacturing firms.

## DISCUSSION

The resulted priority competency skills of manufacturing industry could serve as an input to curriculum development. Skill gap analysis was conducted to the different subjects / courses offered under the Industrial Engineering program of University X.

In the third year courses offering of the IE Curriculum, Methods Engineering addresses the twelve ( 12 ) competency skills. This is a five unit course where it involves measuring the time and motion of the workers in doing their tasks and the terminal objective of the course is to improve the existing work through elimination of unnecessary movement which lead to reduction of time in doing the task. Problem solving skills and performance understanding had the most addressed competency skills in this particular year level.

In the fourth year courses offering of the IE Curriculum, Strategic Planning course addresses the eleven ( 11 ) identified industry competency skills. System thinking and understanding followed by business understanding, problem solving skills and technological awareness and understanding got the most addressed skills in this year level.

In the fifth year courses offering, Industry Engineering Practice addressed all the identified industry competency skills. In this course, the fifth year Industrial Engineering students have 200 hours to work in an industry whether it is manufacturing or service firm as On the Job Trainee ( OJT). The Industrial Engineering students will have the opportunity to be exposed in one department of the firm and apply their theoretical knowledge into actual use. At the end of the course, the students will submit a written report about their experience in the firm and proposed improvements in their workplace. The most addressed skills are performance understanding, technological awareness, systems thinking and understanding and business understanding.

Reviewing the resulted industry priority skill, Leadership skill ranked number one was not adequately addressed in the course offering, however it can close the skill gap by providing seminars and training that leads to acquiring leadership skills. Ability to see the big picture also inadequately addressed, it could close the gap by adding more case studies in systems engineering course and in Facilities Planning and Design course.

## CONCLUSION

The result of the study, which is the priority skill requirement of the manufacturing industries, reflected that the manufacturing firms have great challenge and high expectations in academic institution specifically to an entry-level Industrial Engineer. For instance, the top ranked competency skills is leadership skills, in this regard, fresh graduate engineer and/or the entry-level engineer must know how to lead and influence others positively to achieved the firm's desired results. Moreover, their position in the manufacturing firm will likely handle several workers, which mean; they will manage the work of others and see to it that the required results are being achieved.

## RECOMMENDATION FOR FURTHER STUDIES

A cross sectional studies are recommended in order to validate the resulted significant relationship of problem solving skills to the other competency skills.

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**A STUDY ON 3G & USB MODEM INTERNET SERVICES USERS IN CHENNAI**

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**ABSTRACT**

In recent years, the Indian telecom industry has witnessed phenomenal growth conducive business environment, favorable demographic outlook and the political stability enjoyed by the country have contributed to the growth of the industry. India achieved the distinction of having the world's lowest call rates (2–3 US cents), the fastest sale of million mobile phones (1 week), the world's cheapest mobile handset (USD 19) and the world's most affordable color phone (USD 31). Telecom in real sense means transfer of information between two or more persons situated at distant places through radio electric signals. India's public sector telecom company BSNL is the 7<sup>th</sup> largest telecom company in the world. Reliance, Vodafone, Airtel, Idea, Virgin Mobile, Tata indicom, Aircel, Uninor etc is other major operators in India. Internet service providers adopt new technologies to provide the quality services to the customers and in view of that there are more advancement in the devices and modes of internet usage. To make sure the availability of internet facility, the internet service providers brought in wireless technology to uses internet on the move. Recently launched devices like USB modem have taken a very good place in the internet world and latest technology 3G is widely used by the wireless internet users. Thus in the near future every one can expect drastic changes in the internet world, which will create high impact on the human lifestyle. This paper studies the perception, expectations and satisfaction levels of customers towards the Wireless Internet facilities.

**KEYWORDS**

Telecom industry, wireless technology, 3G, USB modem etc.

**INTRODUCTION**

**3G** or **3rd Generation** is a generation of standards for mobile phones and mobile telecommunications services fulfilling specifications by the International Telecommunication Union. Application services include wide-area wireless voice telephone, mobile Internet, access, video calls and mobile TV, all in a mobile environment. Compared to the older 2G and 2.5G standards, a 3G system must provide peak data rates of at least 200 kbit/s according to the IMT-2000 specification. Recent 3G releases, often denoted 3.5G and 3.75G, also provide mobile broadband access of several Mbit/s to laptop computers and smartphones.

A new generation of cellular standards has appeared approximately every tenth year since 1G systems were introduced in 1981/1982. Each generation is characterized by new frequency bands, higher data rates and non backwards compatible transmission technology. The first release of the 3GPP Long Term Evolution (LTE) standard does not completely fulfill the ITU 4G requirements called IMT-Advanced. First release LTE is not backwards compatible with 3G, but is a pre-4G or 3.9G technology, however sometimes branded "4G" by the service providers. WiMAX is another technology verging on or marketed as 4G.

**USB MODEM**

Netconnect High Speed 1x service offers you hi-speed wireless Internet access across India in over 24000 towns & 6 lakh villages, as well as along major highways, railway routes, airport lounges and remote locations. Access internet and e-mail on the move at a speed that's upto four times faster than dial up.

**INDIAN INTERNET & BROADBAND SERVICES SNAPSHOT**

<b>Internet &amp; Broadband Subscribers</b>	
<b>Total internet subscribers (including Broadband)</b>	<b>13.54 million</b>
<b>% of Growth During the Quarter</b>	<b>5.30%</b>
<b>Broadband Subscribers</b>	<b>6.22 million</b>
<b>Wireless Data Subscriber</b>	<b>117.82 million</b>

According to TRAI's report, India currently has only 13.54 million Internet subscribers, which includes broadband. This is a ridiculously low number !

**FACTS ABOUT INDIAN TELECOM INDUSTRY**

1. The Indian Telecom sector is third largest network in the world.
2. Subscriber numbers already crossed 250 million.
3. Average growth rate of over 40% in respect of subscribers.
4. 9 million Internet and 2.5 million broadband subscribers.
5. More than a thousand cities have been provided with broadband connectivity out a total of five thousand cities.

**REVIEW OF LITERATURE**

**Girija (1998)**, in her article "Socioeconomic Implications of Telecommunications Liberalization: India in the International Context" says that Telecommunications restructuring have evolved differently in Asia and Latin America. While Asian governments have moved cautiously in bringing changes to the sector, Latin American nations have implemented radical ownership and market transformations. The Indian telecommunications reform falls in between these two general

regional trends. The choice of a high component of competition, increased private participation, and no privatization of the national carrier set conditions that will trigger unique socioeconomic effects. This article identifies and highlights the likely implications of the Indian reform on key economic and social issues, such as the cost of services, cross-subsidies, network interconnection, private investments, universal services, employment, and the possible rise of an information-intensive economy. It does so by comparing and contrasting the Indian experience with dominant reform strategies elsewhere in the developing world.

**Chowdary (1999)** discusses how Telecom reform, or de-monopolization, in India has been bungled. Shaped by legislation dating back to the colonial era and post Second World War socialist policies, by the mid-1980s India realized that its poor telecommunications infrastructure and service needed reform. At the heart of the problem lay the monopoly by the government's Department of Telecommunications (DOT) in equipment, networks and services. The National Telecom Policy 1994 spelt out decent objectives for reform but tragically its implementation was entrusted to the DOT. This created an untenable situation in which the DOT became policymaker, licenser, regulator, operator and also arbitrator in disputes between itself and licensed competitors. He discusses the question: 'Why did India get it so wrong? and What India should do now?'

**Anand (1999)**, in his article named "India's economic policy reforms" says that India was embarked on economic reforms in July 1991, in the wake of a balance of payments crisis. In this article, an attempt is made to review two books and a set of World Bank reports concerning the progress of these reforms. Issues concerning economic policy, impact of the reforms on poverty, sectoral issues relating to agriculture, industry and infrastructure are briefly discussed. As reforms enter a more difficult phase, several challenges remain. Some of this fall under the "economic agenda" of measures needed to maintain economic growth; others can be termed the "development agenda" - of improving human development. Progress with regard to the former is not sufficient to produce results concerning the latter.

**Bhattacharya (2000)** constructs a vision of the Indian telecommunication sector for the year 2020. The paper aims at isolating agents of change based on international experiences and situates India in the development continuum. The agents of change have been broadly categorized into economic structure, competition policy and technology.

**Das (2000)**, in her paper described the Liberalisation of the Indian telecommunications services which started in mid nineties with no change in the existing public monopoly structure, entirely controlled by Department of Telecommunications (DoT). In order to evaluate any proposed industry structure, it is essential to analyse the production technology of DoT so as to determine the rationale of liberalisation and sustainability of competition. Accordingly, the researcher estimates a frontier multi-product cost function for DoT, where the cost function has been duly modified to account for the production technology of a public monopoly. The study finds that although DoT displays high allocation inefficiency, it is still a natural monopoly with very high degree of sub additivity of cost of production. This study implies that the choice of any reform policy should consider the trade-off between the loss of scale and scope economies and cost saving from the reduction in inefficiency of the incumbent monopoly in the event of competition.

**Rao (2000)**, in her article named "Internet service providers in India", provides a broad view of the role of an Internet service provider (ISP) and the factors to be considered before entering the ISP market. Describes the Internet/ISP scene within India and discusses the configuration of local, regional and national level ISPs, and the supporting infrastructure. She also identifies the various success factors. The global Internet scenario is discussed regarding the phases of the Internet in India, i.e. pre and post commercialization. The main players are described: ERNET, NICNET, STPI, VSNL, MTNL, Satyam Infoway and Bharti-BT. The financial and legal implications are highlighted in the Indian context. Many companies entered the nascent ISP business in India due to deregulation. Building local content, foreknowledge of new Internet technologies, connecting issues, competitiveness, etc. would help in their sustainability. She concludes that though many companies entered the nascent ISP businesses in India due to deregulation, many of them are unlikely to survive in the longer term.

**Vrmani (2000)** estimates the contribution of telecommunication (or telecom) services to aggregate economic growth in India. Estimated contribution is distinguished between public and private sectors to highlight the impact of telecom privatization on economic growth. Knowledge of policy determinants of demand of telecom services is shown to be essential to enhance growth contribution of telecom services. Using a recent sample survey data from Karnataka State in South India, price and income determinants of demand for telecom services are estimated by capacity of telephone exchanges. Estimation results offer evidence for significant negative own price elasticity and positive income elasticity of demand for telecom services.

**Narinder (2004)**, in his article "Enhancing Developmental Opportunities by Promoting ICT Use: Vision for Rural India" talks about the foremost benefits of Information and Communication Technologies (ICTs) in developing countries that can be helpful in improving governance including public safety and eradication of illiteracy. The benefits of ICTs have not reached the masses in India due to lack of ICT infrastructure, particularly in rural areas, where two-third of the population of the country lives. Even in cities and suburban areas, use of ICTs is not popular due to lack of awareness to its use, computer illiteracy, and absence of practical applications. India is the largest country in South Asia, with a population of over one billion people and its telecom sector is presently experiencing fast growth phases. However telephony penetration in villages is less than two percent of the rural population and about 15 percent of the villages are still without any telephony service. Universal access to ICTs in rural areas has been planned and is being implemented through Public Tele Info Centers having voice data and video, as majority of villagers in India cannot afford a separate home connection. Illiteracy in rural areas is as high as 40 percent and in some tribal belts hardly about 20 percent people are literate. There are 35 million children in age group of 6-11 years, who are out of school and one out of four drops out during primary classes. Education and training, therefore, must be given the top priority if advantages of ICTs are to be harnessed. Indian economy is agriculture based and employs maximum workforce. Improvement in agriculture productivity can help in reducing rural poverty. Adoption of ICT in agriculture will play an increasingly important role in crop production and natural resource management. The other critical factor is technological challenges for universal access to ICTs to bring down the network access cost.

**Nikam, Ganesh, Tamizhchelvan (2004)**, analyses that changing face of India in bridging the digital divide. He reiterated - "India lives in villages" said the Father of the Nation, Mahatma Gandhi. With 1,000 million people and 180 million households, India is one of the biggest growing economies in the world. With the advent of the Information, Communication and Technology (ICT) revolution, India and its villages are slowly but steadily getting connected to the cities of the nation and the world beyond. Owing to the late Rajiv Gandhi, India is now a powerful knowledge economy, and though India may have been slow to start, it certainly has caught up with the West and is ahead in important respects. The Government, the corporate sector, NGOs and educational institutions have supported rural development by encouraging digital libraries, e-business, e-learning and e-governance. The aim of this paper is to touch upon and highlight some of the areas where, by using ICT, the masses have been reached in this way. A follow-up paper will outline collections of significant cultural material which, once national IT strategies are fully achieved, could form part of a digitally preserved national heritage collection.

**Dey (2004)**, in her article talks about the discussions between the Federal Communications Commission (FCC) and communications policy makers and regulators in other countries and how they have gleaned several clusters of issues where further research would directly benefit them. Recently, there have been two notable shifts. First, as the acceptance of the competition model over the monopoly model for telecommunications markets takes deep effect in regulators all over the world, questions regarding process and procedure for regulation are becoming ever more urgent. This paper discusses current questions regarding decision making, enforcement, and understanding consumer issues that arise often in the FCC's discussions with other regulators. Second, technological change is potentially shifting market definitions. In the FCC's discussion with other regulators over the last two years, the overlap of wireline telecom, wireless telecom and cable television has become more pronounced.

**Singh (2005)**, in his article "The role of technology in the emergence of the information society in India" describes the role that information and communication technologies are playing for Indian society to educate them formally or informally which is ultimately helping India to emerge as an information society. Though India has a huge population, the illiteracy rate is also huge in this country. The paper has taken an approach to find the historical situation and present the prevailing scenario as well as the change that are taking place with the application of ICT to the advantage of the society in different areas including daily life. India is making all out efforts to be counted among the developed nations of the world. The article also describes the considerable attention India is taking for application of technology, development of infrastructure and human resource for meeting national needs. Basically India is building an information society. Technology has helped society to cut across the traditional boundaries for getting converted into an emerging information society. The study concludes that The Indian software and services industry has significantly helped to boost the Indian economy. In IT-enabled services too, India has been clearly perceived to be the

dominant hub. The Indian software sector is being recognized as the single largest contributor to incremental market capitalization in India but the sector is still small in terms of contribution to GDP, especially when compared to other large sectors in the economy like agriculture and manufacturing. Similarly, the telecommunication sector has contributed a lot but still has a considerable way to go. The paper also enforces that comparisons of India's telecommunication statistics with those of developed and other emerging economies show that the country is still far behind its contemporaries.

**Banka (2006)** gives an overview of the mergers and acquisitions in the telecommunication industry. According to him Governments decision to raise the foreign investment limit to 74% is expected to spur fresh rounds of mergers and takeovers in India. He foresees a sector that represents humongous opportunity waiting to be tapped by Indian and foreign conglomerates.

**Thomas (2007)**, in his article describes the contribution made by telecommunications in India by the state and civil society to public service, this article aims to identify the state's initial reluctance to recognize telecommunications provision as a basic need as against the robust tradition of public service aligned to the postal services and finds hope in the renewal of public service telecommunications via the Right to Information movement. The article follows the methodology of studying the history of telecommunications approach that is conversant with the political economy tradition. It uses archival sources, personal correspondence, and published information as its research material. The findings of the paper suggests that public service in telecommunication is a relatively "new" concept in the annals of Indian telecommunications and that a deregulated environment along with the Right to Information movement holds significant hope for making public service telecommunications a real alternative. The article provides a reflexive, critical account of public service telecommunications in India and suggests that it can be strengthened by learning gained from the continual renewal of public service ideals and action by the postal services and a people-based demand model linked to the Right to Information Movement. All studies done by the researcher suggests that the right to information movement has contributed to the re-vitalization of participatory democracy in India and to a strengthening of public service telecommunications.

**Cygnus Business Consulting & Research Pvt. Ltd. (2008)**, in its "Quarterly Performance Analysis of Companies (April-June 2008)" has analysed the Indian telecom industry in the wake of recent global recession and its overall impact on the Indian economy. The analysis is done in the background of wake of global recession and rising inflation. Cygnus estimates, the Indian telecom industry is expected to maintain the growth trajectory in the next quarter as well. With almost 5-6m subscribers are being added every month, and the country is witnessing wild momentum in the telecom industry.

**Maheshwari (July-September 2008)**, in her report analysed the Indian telecom industry and ascertain that Indian telecommunications has been zooming up the growth curve at an mounting pace, and India is has surpassed US to become the second largest wireless network in the world. This growing subscriber base is basically created by tapping into rural India, which is an emerging market for the industry. The estimate for the next five to ten years is that the rural market will form 40 % of the subscriber base. The study has analysed the human resource management process of the industry, and specially the latest trends of recruitment of this massively growing industry.

**Anderson (2008)**, in his single executive interview titled "Developing a route to market strategy for mobile communications in rural India An interview with Gurdeep Singh, Operations Director, Uttar Pradesh, Hutch India" suggests that managers need to go beyond traditional approaches to serving the poor, and innovate by taking into account the unique institutional context of developing markets. His practical implication says that the experience of Hutchison Essar in India provides some important lessons for mobile network operators (MNOs) and other firms in other developing markets who are hoping to serve the rural poor: Hutchison has recognized the value of corporate and noncorporate partners. The company has proactively established relationships with individual entrepreneurs, and has provided has provided development support to other partners such as distributors. The company has recognized the value of leveraging existing local institutions, and has seen gaps in local infrastructure or missing services as potential opportunities rather than barriers to growth. The company has seen the rural market as an opportunity – not just an obligation to be served because of universal service obligations. Also this article demonstrates that MNOs can deliver availability and affordability to achieve increased individual or household penetration through business model innovation.

**Mani (2008)** addresses a number of issues arising from the growth of telecom services in India since the mid-1990s. It also discusses a number of spillover effects for the rest of the economy and one of the more important effects is the potential to develop a major manufacturing hub in the country for telecom equipment and for downstream industries such as semiconductor devices. The telecom industry in India could slowly become an example of the service sector acting as a fillip to the growth of the manufacturing sector. A beginning towards this has been made. The formation of a Telecom Equipment Export Forum and the announcement of the Indian Semiconductor Policy 2007 are steps in this direction. Success crucially depends on the response of the private sector to these incentives. Given the importance that a regulatory agency can play in this crafting, no effort should be lost in strengthening the powers of the TRAI. The benefits to the Indian economy from having both a strong services and manufacturing segments in the telecom sector cannot be undermined.

**Narayana (2008)** estimates the contribution of telecommunication (or telecom) services to aggregate economic growth in India. Estimated contribution is distinguished between public and private sectors to highlight the impact of telecom privatization on economic growth. Knowledge of policy determinants of demand of telecom services is shown to be essential to enhance growth contribution of telecom services. Using a recent sample survey data from Karnataka State in South India, price and income determinants of demand for telecom services are estimated by capacity of telephone exchanges. Estimation results offer evidence for significant negative own price elasticity and positive income elasticity of demand for telecom services.

**Sharma (2009)** deals with the major challenges faced by India's telecom equipment manufacturing sector, which lags behind telecom services. Only 35% of the total demand for telecom equipment in the country is met by domestic production. This is not favourable to long-term sustained growth of the telecom sector. The country is also far behind in R&D spending when compared to other leading countries. India needs to see an increase in R&D investment, industry-academia-government partnership, better quality doctoral education and incentives to entrepreneurs for start-ups in telecom equipment manufacturing. In 2006-07, 65% of the total consumption of equipment was met through imports. This trend has far-reaching implications for the economy and should not be allowed to continue for long. In a country like India which has a problem of massive unemployment, the manufacturing sector should be promoted to create more employment opportunities.

**Shah (February, 2009)**, has analyzed Indian telecom industry and studied the sector keeping in mind three companies; namely Bharti, R.Comm and idea in the background of recent global meltdown. The study suggests that though there is no sign of slowdown in this sector, but surely a strong turmoil is going on in the industry. The study states that the sector is fairly immune from the current economic downturn & does provide a good defensive bet in medium term. With the help of newer technologies, wireless penetration is expected to increase in the near future, which is basically fuelling the growth of the sector. While the 3G / Broadband adoption would ensure long term growth momentum, the article has thoroughly investigated about the intense competitive scenario, pricing pressure, high capital intensity & substantial regulatory uncertainties currently faced by the industry. The article has also described the cause of being relatively safe of this industry.

The causes described by Shah are increasing rural coverage, rising affordability, declining handset/subscription costs, substantially low tariffs & established brand/distribution. However, the study also cautions the telecom industry that a steeper economic slowdown could start impacting the subscriber usage patterns as well as operator capital investments & thereby could substantially restrict revenue growth rates going forward.

## STATEMENT OF THE PROBLEM

Wireless internet users are looking for convenient and satisfied services, so service providers are coming up with new wireless internet devices. The introduction of new wireless devices would create selection bias among customers. Here the research problem is on knowing, what is the preference of customers for their wireless internet needs. There are many Wireless devices in the market for internet connectivity, among them 3G and USB Modem Internet facilities are unique. Thus a Study on these two devices would reveal the user's i.e the customer's preference and perception on them.

## OBJECTIVES

1. To understand the Perception of Customers on the Wireless Internet Facilities
2. To analyze the customer expectations on wireless internet facilities with different parameters.

3. To study the Satisfaction level of customers on the tariff.
4. To know the overall Satisfaction level of Customers on the Wireless Internet Facilities

**RESEARCH DESIGN TO MEET THE OBJECTIVES**

<b>Location</b>	Chennai
<b>Sampling Unit</b>	Corporates
<b>Sampling Size</b>	200
<b>Sampling Method</b>	Convenience Sampling
<b>Instrument for Information</b>	Structured Questionnaire

**STATISTICAL TESTING FOR RESEARCH HYPOTHESIS**

**CHI SQUARE TEST 1**

**CURRENT SERVICE PROVIDER FOR WIRELESS INTERNET AND TARIFF SATISFACTION LEVEL**

H0-There is no significant association between current service provider and Tariff satisfaction level

H1- There is a significant association between current service provider and Tariff satisfaction level

Degree of Freedom = (Row – 1)\*(Column – 1) = (5-1) \* (4-1) = 12

Level of significance = 0.05

**TABLE SHOWING CURRENT SERVICE PROVIDER WITH TARIFF SATISFACTION LEVEL**

Current service provider	Tariff satisfaction level					Total
	Highly Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat dissatisfied	Totally Dissatisfied	
Reliance	13	27	30	0	0	70
MTS	0	17	1	0	2	20
TATA	6	39	11	7	2	65
BSNL	1	37	5	2	0	45
Total	20	120	47	9	4	200

$\chi^2$  Tabulated = 21.03,  $\chi^2$  Calculated = 22.70492

Inference:

From the above analysis, the calculated value is greater than the tabulated value, so reject the null hypothesis; therefore there is significant association between the current service provider and tariff satisfaction level.

**CHI SQUARE TEST 2**

**Purpose of using wireless internet with Data limit**

H0-There is no significant association between Purpose of using wireless internet with Data limit used.

H1- There is a significant association between Purpose of using wireless internet with Data limit used

Degree of Freedom = (Row – 1)\*(Column – 1) = (4-1) \* (3-1) = 6

Level of significance = 0.05

**TABLE SHOWING PURPOSE OF USING WIRELESS INTERNET WITH DATA LIMIT USED**

Purpose	Usage				Total
	2GB	4GB	5GB	Unlimited	
Business	32	11	17	24	84
Entertainment	24	9	12	18	63
Educational	20	7	12	14	53
	76	27	41	56	200

$\chi^2$  Tabulated = 12.59,  $\chi^2$  Calculated = 13.37

Inference:

From the above analysis the calculated value is greater than the tabulated value, so reject the null hypothesis; therefore there is significant association between the Purpose of using wireless internet with Data limit used.

**WEIGHTED AVERAGE METHOD**

**TABLE SHOWING RATING WIRELESS INTERNET FEATURES ON THEIR EXPERIENCE 3G INTERNET**

Parameter	Very good	Good	Average	Below Average	Very poor	Total Weighted	Weighted Average	Rank
Network	103	40	57	-	-	846	1.69	2
Speed	112	54	34	-	-	878	1.75	1
Portability	27	46	95	32	-	668	1.33	3

**INFERENCE**

Through weighted average method, according to respondents experience it is found that Speed is rated very good in 3G services, followed by Network and Portability.

**TABLE SHOWING RATING WIRELESS INTERNET FEATURES ON THEIR EXPERIENCE USB INTERNET**

Parameter	Very good	Good	Average	Below Average	Very poor	Total Weighted	Weighted Average	Rank
Network	106	51	43	-	-	863	1.72	2
Speed	87	68	45	-	-	842	1.68	3
Portability	133	41	26	-	-	907	1.81	1

**INFERENCE**

Through weighted average method, according to respondents experience it is found that Portability is rated very good in USB services, followed by Network and Speed.

**ONE WAY ANOVA**

Showing parameters that meets the expectation of the customer by the Internet Service Provider

Parameters	Highest Valued	Highly Valued	Average	Low Valued	Least Valued	Row Total
Network	173	20	7	-	-	200
Tariff	164	27	9	-	-	200
Data Transfer Limit	192	8	-	-	-	200
Customer Service	134	45	21	-	-	200
Column Total	663	100	37	0	0	800

**NULL HYPOTHESIS H<sub>0</sub>**: There is no significant relationship between the expectations of the customer and the Internet Service provider.

**ALTERNATIVE HYPOTHESIS H<sub>1</sub>**: There is significant relationship between the expectations of the customer and the Internet Service provider.

**ONE WAY ANOVA TABLE**

SOURCES OF VARIANCES	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE	F-RATIO	5% TABLE VALUE
Between Columns	80734.5	(c-1)4	20183.62	3.62	F(4,15)
Within Rows	83434	(n-c)15	5562.27		
TOTAL	164168.5	20			

Calculated Value = 3.62, Table Value = 3.0556

Since the Calculated Value is greater than Table Value, we reject Null Hypothesis at 5% significant level. Hence there is a significant relationship between the expectations of the customer and the Internet Service Provider.

**FINDINGS**

- 65% of the respondents use USB Modem and only 35% use 3G internet services.
- 43% of respondents rank their service provider with rank 1, 21% of respondent's rank 2 to their service provider, 19% of respondent's rank 4 to their service provider and 17% of respondents rank 2 to their service provider.
- According to respondents experience it is found that Speed is rated very good in 3G services, followed by Network and Portability.
- According to respondents experience it is found that Portability is rated very good in USB services, followed by Network and Speed.
- 67% of the respondents say that Customer service should be the highest valued one in any service provider, 22.5% respondents say it should be high valued and 10.5% respondents say it should be average.
- 38% of respondents use 2GB transfer limit, 13.5 % of respondents use 4GB transfer limit, 20.5% of respondents use 5GB transfer limit and 28% respondents use unlimited transfer plan.
- 57.5% of respondents say that 3G wireless internet is affordable to them and 42.5% of respondents say USB Modem internet is affordable to them.
- 84% of the respondents are not using other wireless connectivity solutions and 16% of respondents use other wireless connectivity solutions.
- 45% of respondents say that CDMA modem is constraint to them, 33.5% respondents say non affordability is the constraint and 21.5% say that dual internet and mobile is a constraint.
- Wireless Internet users suggest that Data transfer limit should be standard one.
- Network is fluctuating, hence updating of technology is mandatory.

**RECOMMENDATIONS**

- It has been found that the overall satisfaction of the customers on their service provider is low, thus Service provider should know the pulse of the customers so that Service provider can increase the overall quality of the service.
- Portability of both 3G and USB Modem Internet can be increased.
- Internet users should get the wireless devices in an affordable price so the service provider should sell the device at a nominal rate. Through this more broadband users and Wi-fi modem users will shift or change to Wireless internet connections.
- Internet service providers can monitor the network quality now and then, more value added services can be bonded with service.

**CONCLUSION**

Technology has invaded all industries and its use in field of communication system is tremendous. Adoption of new technologies makes communication easier and common man is highly benefited by this. Among them 3G and USB modem plays a vital role and this study has revealed many things about them. The customer expectation was known by this study and their experience is shared. The future is completely depending on faster communication systems and adoption of new technologies would be the only option for mankind. Telecom industry is taking a new avatar; TRAI is licensing and regulating the industry. With the support any individual who likes to connect to the world will surely have a solution.

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## A RISK RETURN PERCEPTION OF SENSEX AND NIFTY STOCKS

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### ABSTRACT

*Stock Exchanges are intricately interwoven in the fabric of a nation's economic life. Stock Market investments are preferred by most of the investors as, equity investment is perceived as the highest return potential avenue though it is considerably a risky venture. There are 23 recognized stock exchanges functioning in India, of which BSE and NSE are considered to be the most imperative exchanges as one can identify the booms and busts of the Indian stock Market through its indices SENSEX and NIFTY respectively. The stock markets witnessed sensitive activity in terms of various bulls and bear runs from early nineties especially during the financial year 2007-08. Stock markets touched the maximum levels and melt down to the least levels during this period. The collapse of the debt markets in 2007 was alarming in its speed and extent. SEBI's corrective measures in the months of July 07, October 07, November 07 and January 08 controlled the volatility. Though Risk and return are inseparable in stock market investments, it is vital to verify how much risk is appropriate to attain a required rate of return from investing in shares. This study is an attempt to educate the investors about the quantum of risk involved in attaining their desirable return. In this lines risk and return of stocks that are listed in BSE and NSE during the financial year 2007-08 were considered for analysis using CAPM and VaR. The study revealed that the proportion of losses exceeding computed VaR is the same for all the 30 BSE stocks but not the same for all the 50 NSE stocks.*

### KEYWORDS

Risk return, Sensex, Nifty, Stock, Exchange.

### INTRODUCTION

Investment with handsome returns" is the mantra chanted by each and every one who is oriented towards their financial goals. Though there are myriad investment avenues available for an investor to invest, the investor has to be extremely precautionous while deciding his portfolio. The key deciding factor to be considered with regard to any investment avenue is its risk. Risk may be of various kinds like Capital Risk, Inflationary Risk, Interest Rate Risk, Market Risk, Liquidity Risk, Financial Risk, Business Risk, Legislative Risk, etc. First the investor has to chart out the tolerable risk echelon, for which the investor has to decide about investment's time horizon and bankroll he can afford to lose. Based on the risk complexion the investor may prefer investment avenues like bank deposits, Commercial Papers, Certificate of deposits, Mutual funds, Shares, Bonds, Debentures Bullion, etc.

Stock Market investments are preferred by investors as Equity investment is perceived as the highest return potential avenue. Stock Exchanges are intricately interwoven in the fabric of a nation's economic life. Without a stock exchange, the savings of the community-the sinews of economic progress and productive efficiency – would remain underutilized. As stock exchanges are the exclusive centers for trading of securities, a free and active market in stock and shares has become a pre-requisite for the mobilization and distribution of the nation's savings on the scale needed to support modern business. The **stock market** is one of the most important sources for companies to raise money. This allows businesses to be publicly traded, or raise additional capital for expansion by selling shares of ownership of the company in a public market. The liquidity that an exchange provides affords investors the ability to quickly and easily sell securities. There are 23 stock exchanges in India, of which only 18 stock exchanges are currently in the operative mode. Among 18 exchanges BSE and NSE are considered to be the primary exchanges of India.

BSE was the first stock exchange in the country to be approved permanent recognition under the Securities Contract Regulation Act, 1956. Even today one can identify the booms and busts of the Indian stock Market through BSE's SENSEX. Sensex is an index of 30 stocks representing 12 major sectors. It represents all the major industrial groups and reflects the movement of market and investors' sentiments towards the state and perception of future economic activities. If the Sensex goes up, it means that the prices of the stocks of most of the major companies on the BSE have gone up. BSE provides an efficient and transparent market for trading in equity, debt instruments and derivatives. To maintain the stability of the sensex, they have to update the past base year average. The base year value adjustment ensures that replacement of stocks in Index, additional issue of capital and other corporate announcements like 'rights issue' etc. do not destroy the historical value of the index.

The trading scenario in India then underwent a paradigm shift in 1993, when NSE or National Stock Exchange was recognized as a Stock Exchange. Within just a few years, trading on both the exchanges shifted from an open outcry system to an automated trading environment. NSE has been able to take the stock market to the doorsteps of the investors. NSE is the leading index for large companies on the National Stock Exchange of India.

The Nifty is a well diversified 50 stock index accounting for 21 sectors of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, index based derivatives and index funds. For this study I have taken the indices as S&P CNX Nifty and CNX Nifty Junior scrips. The S&P CNX Nifty Index is known as **Standard & Poor's CRISIL NSE Index**. The **CNX Nifty Junior** is an index for companies on the National Stock Exchange of India. It consists of 50 companies representing approximately 10% of the traded value of all stocks on the National Stock Exchange of India. The CNX Nifty Junior is owned and operated by India Index Services and Products Ltd.

Both these indices are calculated on the basis of market capitalization and contain the heavily traded shares from key sectors. An Index is a comprehensive measure of market trends, intended for investors who are concerned with general stock market price movements. An Index comprises stocks that have large liquidity and market capitalization. Each stock is given a weight age in the Index equivalent to its market capitalization.

The Government of India established the Securities and Exchange Board of India, the regulatory body of stock markets in 1988. The basic objectives of the Board were identified as to protect the interests of investors in securities, to promote the development of Securities Market and to regulate the Securities Market. The SEBI has been inspecting the stock exchanges once every year since 1995-96.

Though the stock markets have witnessed sensitive activity in terms of various bulls and bear runs from early nineties, during the financial year 2007-08 Indian stock markets have witnessed utmost fluctuations. Stock Markets touched the maximum levels and melt down to the least levels during this period. The collapse of the debt markets in 2007 was alarming in its speed and extent. During July 2007 Sensex and Nifty touched a new pinnacle of around 16,000 points and 7000 points respectively due to intense buying activity of FIIs.

During October Sensex for the first time in history stroked a mark of 20,000 points. SEBI felt the need to urgently regulate the laws relating to Participatory Notes and on 16th October 2007 it issued a discussion paper suggesting an immediate ban on issue of PNs by FIIs against underlying derivatives (futures and options on shares) while also restricting issue of PNs in the cash segment. SEBI realized that FIIs bring in valuable capital and must be encouraged by suitable policy amendments. And on 14<sup>th</sup> November the market regulator SEBI based on the recommendations made by the SEBI Committee on Derivatives decided to introduce seven new derivative instruments like mini-contracts and long-tenure options for giving more choice to investors. The markets welcomed the decisions and history was created on 7<sup>th</sup> January 2008 when the Sensex leaped 20,861.83 points to cross the hallowed 23,000 mark for the first time.

In the third week of January 2008, the Sensex experienced huge falls along with other markets around the world. On 21 January 2008, the Sensex saw its highest ever loss of 1,408 points at the end of the session. The Sensex recovered to close at 17,605.40 after it tumbled to the day's low of 16,963.96, on high volatility as investors panicked following weak global cues amid fears of a recession in the US.

This paper is an attempt to analyze the risk and return of stocks that are listed in BSE and NSE using CAPM and VaR during the financial year 2007-08.

## OBJECTIVES

1. To analyze the probability of losses associated with the market risk.
2. To make out the degree of correlation between risk-free rate and market return.
3. To understand the application VaR as a risk measurement tool.

## METHODOLOGY

The datum was collected from the secondary sources i.e. from Books, Magazines, and Journals and from Internet. The statistical data were collected from BSE and NSE websites.

### EXPECTED RETURN

The expected return on a risky asset, given a probability distribution for the possible rates of return. Expected return equals some risk-free rate (generally the prevailing U.S. Treasury note or bond rate) plus a risk premium (the difference between the historic market return, based upon a well diversified index such as the S&P 500 and the historic U.S. Treasury bond) multiplied by the asset's beta.

### BETA

The **beta coefficient**, in terms of finance and investing, describes how the expected return of a stock or portfolio is correlated to the return of the financial market as a whole. Measuring beta can give clues to volatility and liquidity in the marketplace.

### RISK FREE RATE

The **risk-free interest rate** is the interest rate that it is assumed can be obtained by investing in financial instruments with no default risk.

### RISK PREMIUM

The difference between the expected market rate of return and the risk-free rate of return is the risk premium.

### TOOLS FOR RISK ANALYSIS

#### DEFINITION OF VAR

A general definition of VaR is: "Given a probability of c% and a holding period of t-days, an entity's VaR is a loss that is expected to be exceeded with a probability only p% on the t-day holding period".

Accordingly, VaR is the value for which

$$\text{Prob}[\text{abs}(\text{loss}) > \text{VaR}] < p$$

VaR is a technique used to estimate the probability of portfolio losses based on the statistical analysis of historical price trends and volatilities. VaR is able to measure risk while it happens and is an important consideration when firms make trading or hedging decisions. VaR has five main uses in finance: risk management, risk measurement, financial control, financial reporting and computing regulatory capital. VaR has become a standard measure of market risk embraced by banks, trading firms, mutual funds and others, including even the non-financial firms.

#### CHI-SQUARE TEST

Chi-square is a statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis. Thus chi-square is the sum of the squared difference between observed (o) and the expected (e) data, divided by the expected data in all possible categories.

#### HYPOTHESIS

Hypothesis is an assumption or concession made for the sake of argument. Null Hypothesis is a statistical hypothesis to be tested and accepted or rejected in favor of an alternative.

Null Hypothesis :  $H_0: p_1=p_2=p_3=\dots=p_k$

Alternate Hypothesis :  $H_1: p_1 \neq p_2 \neq p_3 \neq \dots \neq p_k$

Null Hypothesis in this paper: The proportion of losses exceeding computed VaR is same for all the 30 BSE stocks and 50 NSE stocks.

Chi-square test was computed by using the equation:

$$\chi^2 = \sum ((f_o - f_e)^2 / f_e) \quad \text{where } (i=1, 2, \dots, n)$$

Where,

$f_o$  = observed frequency of losses beyond computed VaR

$f_e$  = expected frequency of losses beyond computed VaR

Decision rule:

→ Accept the hypothesis if calculated value < tabulated value

→ Reject the hypothesis if calculated value > tabulated value

### TOOLS FOR RETURN ANALYSIS

#### CAPITAL ASSET PRICING MODEL (CAPM):

This model concludes that the expected return of an asset equals the riskless return plus a measure of the assets non-diversifiable risk ("beta") times the market-wide risk premium. The formula to calculate the expected rate of return is:

**Expected security return = riskless return + beta x (expected market risk premium)**

The formula to find out the expected rate of return is:

$$E(R_i) = R_f + \beta_{im}(E(R_m) - R_f).$$

Where:

- $E(R_i)$  is the expected return on the capital asset

- $R_f$  is the risk-free rate of interest such as interest arising from government bonds
- $\beta_i$  (the beta coefficient) is the sensitivity of the asset returns to market returns, or also 
$$\beta_i = \frac{\text{Cov}(R_i, R_m)}{\text{Var}(R_m)}$$
- $E(R_m)$  is the expected return of the market
- $E(R_m) - R_f$  is sometimes known as the *market premium* or *risk premium* (the difference between the expected market rate of return and the risk-free rate of return)

**ANALYSIS AND INTERPRETATION**

**EXPECTED RATE OF RETURN**

**TABLE: 1-BETA, MARKET RETURNS AND WEIGHTAGE OF SENSEX SCRIPS**

S.No.	Company	Weightage (%)	Beta	Market Return
1	A.C.C.	0.64	0.79	-44.05
2	JAIPRAKASH ASSOCIATES	1.1	1.61	-2.9
3	BHARTI TELEVENTURES	5.2	0.79	-13.67
4	BHEL	2.57	1.09	-10.25
5	CIPLA LTD.	1.16	0.47	1.27
6	DLF LIMITED	1.1	1.37	-30.5
7	GRASIM IND.	1.38	0.73	-30
8	GUJARAT AMBUJA CEMENT	0.69	0.47	-39.22
9	HDFC	5.14	1.02	-3.34
10	HDFC BANK	3.08	1.02	-12.39
11	HINDALCO	1.32	1.24	-11.27
12	HINDUSTAN LEVER	2.44	0.54	9.13
13	ICICI BANK	7.61	1.27	-34.03
14	INFOSYS TECHNOLOGIES	9.15	0.73	-10.08
15	ITC LTD	5.35	0.68	20.88
16	LARSEN & TOUBSO	6.23	1.11	-0.59
17	MAHINDRA & MAHINDRA	1.03	0.73	-32.9
18	MARUTI UDYOG	0.97	0.68	-16.87
19	NATIONAL THERMAL POWER	2.04	1.15	-0.46
20	ONGC	3.78	1.02	-9.69
21	RANBAXY LAB.	1.48	0.59	47.36
22	RELIANCE	16.51	1.15	23.11
23	RELIANCE COMMUNICATIONS	3.47	1.15	-14.44
24	RELIANCE ENERGY	1.3	1.73	27.8
25	SATYAM COMPUTER	3.03	0.7	-6.45
26	STATE BANK OF INDIA	3.45	1.04	-22.77
27	TATA CONSULTANCY	2.28	0.74	-25.27
28	TATA MOTORS	1.07	0.8	-36.32
29	TATA STEEL	4.05	1.1	37.99
30	WIPRO LTD.	1.39	0.79	-15.54

Source: www.bseindia.com

**TABLE: 2-EXPECTED RATE OF RETURN OF SENSEX SCRIPS**

S.No.	Company	Risk free rate of return	Risk premium	Expected rate of return
1	A.C.C.	5	-49.05	-33.7495
2	JAIPRAKASH ASSOCIATES	5	-7.9	-7.719
3	BHARTI TELEVENTURES	5	-18.67	-9.7493
4	BHEL	5	-15.25	-11.6225
5	CIPLA LTD.	5	-3.73	3.2469
6	DLF LIMITED	5	-35.5	-43.635
7	GRASIM IND.	5	-35	-20.55
8	GUJARAT AMBUJA CEMENT	5	-44.22	-15.7834
9	HDFC	5	-8.34	-3.5068
10	HDFC BANK	5	-17.39	-12.7378
11	HINDALCO	5	-16.27	-15.1748
12	HINDUSTAN LEVER	5	4.13	7.2302
13	ICICI BANK	5	-39.03	-44.5681
14	INFOSYS TECHNOLOGIES	5	-15.08	-6.0084
15	ITC LTD.	5	15.88	15.7984
16	LARSEN & TOUBSO	5	-5.59	-1.2049
17	MAHINDRA & MAHINDRA	5	-37.9	-22.667
18	MARUTI UDYOG	5	-21.87	-9.8716
19	NATIONAL THERMAL POWER	5	-5.46	-1.279
20	ONGC	5	-14.69	-9.9838
21	RANBAXY LAB.	5	42.36	29.9924
22	RELIANCE	5	18.11	25.8265
23	RELIANCE COMMUNICATIONS	5	-19.44	-17.356
24	RELIANCE ENERGY	5	22.8	44.444
25	SATYAM COMPUTER	5	-11.45	-3.015
26	STATE BANK OF INDIA	5	-27.77	-23.8808
27	TATA CONSULTANCY	5	-30.27	-17.3998
28	TATA MOTORS	5	-41.32	-28.056
29	TATA STEEL	5	32.99	41.289
30	WIPRO LTD.	5	-20.54	-11.2266

Source: www.bseindia.com

**INTERPRETATION:** The table 1 & 2 spells out the expected rate of return of stocks included in Sensex for one year period. From the table, it is clear that the company such as Cipla limited, Hindustan Unilever limited, ITC limited, Ranbaxy laboratory, Reliance, Reliance energy and Tata steel showed a positive value of expected rate of return

**TABLE: 3-BETA, MARKET RETURNS AND WEIGHTAGE OF S&P CNX NIFTY SCRIPS**

S. No	Security Symbol	Weightage (%)	Beta	Market Return	S. No	Security Symbol	Weightage (%)	Beta	Market Return
1	ABB	0.70	0.79	13.57	26	NATIONALUM	0.94	0.78	-8.87
2	ACC	0.40	0.73	-3.61	27	NTPC	5.46	1.12	2.67
3	AMBUJACEM	0.46	0.51	-1.41	28	ONGC	8.29	0.99	2.71
4	BHARTIARTL	6.02	0.78	4.86	29	PNB	0.57	1.08	6.41
5	BHEL	3.17	1.1	1.54	30	POWERGRID	1.48	1.14	-1.74
6	BPCL	0.41	0.82	-7.67	31	RANBAXY	0.74	0.53	4.18
7	CAIRN	1.78	0.74	2.77	32	RCOM	3.09	1.19	-21.06
8	CIPLA	0.71	0.47	9.66	33	RELINFRA	0.87	1.86	2.76
9	DLF	3.18	1.45	-3.6	34	RELIANCE	11.77	1.1	-3.23
10	DRREDDY	0.37	0.43	1.76	35	RPL	2.68	1.26	-4.58
11	GAIL	1.27	0.95	5.24	36	SAIL	2.44	1.38	10.98
12	GRASIM	0.67	0.71	7.24	37	SATYAMCOMP	1.07	0.62	10.09
13	HCLTECH	0.59	0.82	16.37	38	SBIN	3.38	1.07	-0.95
14	HDFC	2.52	1.11	2.9	39	SIEMENS	0.70	0.97	0.07
15	HDFCBANK	2.06	1.1	16.26	40	STER	1.68	1.03	-1.02
16	HEROHONDA	0.63	0.45	3.09	41	SUNPHARMA	1.16	0.37	4.34
17	HINDALCO	0.81	1.14	-4.38	42	SUZLON	1.24	1.08	-2.26
18	HINDUNILVR	2.03	0.52	2.4	43	TATACOMM	0.45	1.07	-8.01
19	ICICIBANK	2.83	1.31	5.43	44	TATAMOTORS	0.64	0.79	9.14
20	IDEA	0.82	0.79	-6.42	45	TATAPOWER	0.88	1.27	-9.23
21	INFOSYSTCH	3.79	0.65	10.46	46	TATASTEEL	1.66	1.04	-8.3
22	ITC	2.69	0.7	1.02	47	TCS	3.01	0.75	-2.58
23	LT	2.87	1.09	-0.45	48	UNITECH	0.98	1.61	-2.99
24	M&M	0.54	0.73	10.69	49	WIPRO	2.40	0.77	4.09
25	MARUTI	0.71	0.71	12.85	50	ZEEL	0.36	0.64	12.4

Source: www.nseindia.com

**TABLE: 4-EXPECTED RATE OF RETURN OF S&P CNX NIFTY SCRIPS**

S. No	Security Symbol	Risk free rate of return (%)	Risk premium	Expected rate of return	S. No	Security Symbol	Risk free rate of return (%)	Risk premium	Expected rate of return
1	ABB	5	8.57	11.7703	26	NATIONALUM	5	-13.87	-5.8186
2	ACC	5	-8.61	-1.2853	27	NTPC	5	-2.33	2.3904
3	AMBUJACEM	5	-6.41	1.7309	28	ONGC	5	-2.29	2.7329
4	BHARTIARTL	5	-0.14	4.8908	29	PNB	5	1.41	6.5228
5	BHEL	5	-3.46	1.194	30	POWERGRID	5	-6.74	-2.6836
6	BPCL	5	-12.67	-5.3894	31	RANBAXY	5	-0.82	4.5654
7	CAIRN	5	-2.23	3.3498	32	RCOM	5	-26.06	-26.0114
8	CIPLA	5	4.66	7.1902	33	RELINFRA	5	-2.24	0.8336
9	DLF	5	-8.6	-7.47	34	RELIANCE	5	-8.23	-4.053
10	DRREDDY	5	-3.24	3.6068	35	RPL	5	-9.58	-7.0708
11	GAIL	5	0.24	5.228	36	SAIL	5	5.98	13.2524
12	GRASIM	5	2.24	6.5904	37	SATYAMCOMP	5	5.09	8.1558
13	HCLTECH	5	11.37	14.3234	38	SBIN	5	-5.95	-1.3665
14	HDFC	5	-2.1	2.669	39	SIEMENS	5	-4.93	0.2179
15	HDFCBANK	5	11.26	17.386	40	STER	5	-6.02	-1.2006
16	HEROHONDA	5	-1.91	4.1405	41	SUNPHARMA	5	-0.66	4.7558
17	HINDALCO	5	-9.38	-5.6932	42	SUZLON	5	-7.26	-2.8408
18	HINDUNILVR	5	-2.6	3.648	43	TATACOMM	5	-13.01	-8.9207
19	ICICIBANK	5	0.43	5.5633	44	TATAMOTORS	5	4.14	8.2706
20	IDEA	5	-11.42	-4.0218	45	TATAPOWER	5	-14.23	-13.0721
21	INFOSYSTCH	5	5.46	8.549	46	TATASTEEL	5	-13.3	-8.832
22	ITC	5	-3.98	2.214	47	TCS	5	-7.58	-0.685
23	LT	5	-5.45	-0.9405	48	UNITECH	5	-7.99	-7.8639
24	M&M	5	5.69	9.1537	49	WIPRO	5	-0.91	4.2993
25	MARUTI	5	7.85	10.5735	50	ZEEL	5	7.4	9.736

Source: www.nseindia.com

**INTERPRETATION:** The tables: 3 & 4 shows the expected rate of return of stocks included in S&P CNX Nifty for one year period. From the table, it is clear that the company such as ABB, Ambuja cement, Bharati Airtel, BHEL, CAIRN, Cipla, Dr. Reddy, GAIL, Grasim, HCL Tech, HDFC Bank, Hero Honda, Hindustan Unilever, ICICI Bank, Infosys, ITC, M&M, Maruti, NTPC, ONGC, PNB, Ranbaxy, Reliance Infrastructure, SAIL, Satyam computers, Siemens, Sun Pharma, Tata motors, Wipro, Zeel have showed a positive expected rate of return.

TABLE 5-BETA, MARKET RETURNS AND WEIGHTAGE OF CNX NIFTY SCRIPS

S.No	Security Symbol	Weightage	Beta	Market Return	S. No	Security Symbol	Weightage (%)	Beta	Market Return
1	ANDHRABANK	0.63	0.94	5.54	26	MCDOWELL-N	3.13	0.67	6.23
2	APOLLTYRE	0.46	0.75	29.65	27	IOB	1.13	0.97	7.89
3	ASHOKLEY	1.03	0.88	20.47	28	JPASSOCIAT	4.44	1.45	4.49
4	ASIANPAINT	2.72	0.21	2.06	29	KOTAKBANK	4.81	1.29	14.09
5	AUROPHARMA	0.39	0.63	13.3	30	LICHSGFIN	0.64	1.09	1.36
6	AVENTIS	0.43	0.41	3.86	31	LUPIN	1.39	0.39	-0.8
7	BANKBARODA	2.38	0.99	10.61	32	MOSERBAER	0.39	0.92	9.11
8	BANKINDIA	3.24	1.13	-1.83	33	MPHISIS	1.17	0.61	15.89
9	BEL	1.70	0.61	-4.95	34	JINDALSTEL	6.79	1.41	-8.16
10	BHARATFORG	1.37	0.57	4.56	35	NIRMA	0.49	0.56	-1.15
11	BIOCON	0.90	0.55	2.83	36	PATNI	0.74	0.59	8.6
12	PFC	3.55	1.01	0.45	37	HDIL	1.83	1.57	-17.64
13	CADILAHC	0.94	0.35	4.12	38	ABIRLANUVO	2.86	0.78	-1.68
14	CANBK	2.03	0.88	17.9	39	RNRL	3.56	1.64	-3.52
15	CHENNPETRO	0.88	0.86	-14.52	40	RAYMOND	0.27	0.55	-7.14
16	RELCAPITAL	7.78	1.61	5.59	41	IDFC	2.74	1.19	-0.22
17	ULTRACEMCO	1.69	0.65	2.43	42	TECHM	2.09	0.65	-1.5
18	CORPBANK	0.96	0.65	12.71	43	SYNDIBANK	0.71	1.01	11.55
19	CUMMINSIND	1.45	0.55	13.23	44	TTML	1.16	1.23	6.64
20	INDHOTEL	1.28	0.72	-11.05	45	JSWSTEEL	3.29	0.89	3.71
21	CONCOR	2.63	0.24	4.59	46	UNIONBANK	1.66	1.11	8.78
22	I-FLEX	2.33	0.85	-13.94	47	AXISBANK	5.98	1.05	10.63
23	GMRINFRA	4.32	1.27	11.04	48	VIJAYABANK	0.37	1.13	3.35
24	IDBI	1.40	1.22	11.89	49	INGVYSYABK	0.57	0.54	15.55
25	IFCI	0.78	1.53	-2.72	50	WOCKPHARMA	0.50	0.66	6.65

Source: www.nseindia.com

TABLE 6-EXPECTED RATE OF RETURN OF CNX NIFTY SCRIPS

S. No	Security Symbol	Risk free rate of return (%)	Risk premium	Expected rate of return	S. No	Security Symbol	Risk free rate of return (%)	Risk premium	Expected rate of return
1	ANDHRABANK	5	0.54	5.5076	26	MCDOWELL-N	5	1.23	5.8241
2	APOLLTYRE	5	24.65	23.4875	27	IOB	5	2.89	7.8033
3	ASHOKLEY	5	15.47	18.6136	28	JPASSOCIAT	5	-0.51	4.2605
4	ASIANPAINT	5	-2.94	4.3826	29	KOTAKBANK	5	9.09	16.7261
5	AUROPHARMA	5	8.3	10.229	30	LICHSGFIN	5	-3.64	1.0324
6	AVENTIS	5	-1.14	4.5326	31	LUPIN	5	-5.8	2.738
7	BANKBARODA	5	5.61	10.5539	32	MOSERBAER	5	4.11	8.7812
8	BANKINDIA	5	-6.83	-2.7179	33	MPHISIS	5	10.89	11.6429
9	BEL	5	-9.95	-1.0695	34	JINDALSTEL	5	-13.16	-13.5556
10	BHARATFORG	5	-0.44	4.7492	35	NIRMA	5	-6.15	1.556
11	BIOCON	5	-2.17	3.8065	36	PATNI	5	3.6	7.124
12	PFC	5	-4.55	0.4045	37	HDIL	5	-22.64	-30.5448
13	CADILAHC	5	-0.88	4.692	38	ABIRLANUVO	5	-6.68	-0.2104
14	CANBK	5	12.9	16.352	39	RNRL	5	-8.52	-8.9728
15	CHENNPETRO	5	-19.52	-11.7872	40	RAYMOND	5	-12.14	-1.677
16	RELCAPITAL	5	0.59	5.9499	41	IDFC	5	-5.22	-1.2118
17	ULTRACEMCO	5	-2.57	3.3295	42	TECHM	5	-6.5	0.775
18	CORPBANK	5	7.71	10.0115	43	SYNDIBANK	5	6.55	11.6155
19	CUMMINSIND	5	8.23	9.5265	44	TTML	5	1.64	7.0172
20	INDHOTEL	5	-16.05	-6.556	45	JSWSTEEL	5	-1.29	3.8519
21	CONCOR	5	-0.41	4.9016	46	UNIONBANK	5	3.78	9.1958
22	I-FLEX	5	-18.94	-11.099	47	AXISBANK	5	5.63	10.9115
23	GMRINFRA	5	6.04	12.6708	48	VIJAYABANK	5	-1.65	3.1355
24	IDBI	5	6.89	13.4058	49	INGVYSYABK	5	10.55	10.697
25	IFCI	5	-7.72	-6.8116	50	WOCKPHARMA	5	1.65	6.089

Source: www.nseindia.com

**INTERPRETATION – TABLE 5 & 6:** The table 5 data is directly collected from NSE websites. The table 6 shows the expected rate of return of stocks included in CNX Nifty Junior for one year period from April 2007 to March 2008. From the table 6, it is clear that the company such as Bank India, BEL, CHENNPETRO, INDHOTEL, I-FLEX, IFCI, JINDALSTEL, HDIL, ABIRLANUVO, RNRL, Raymond, and IDFC have showed a negative value of expected rate of return. All the other remaining 38 companies have showed a positive value of expected rate of return. In those 38 companies, Apollo tyre, Corporation Bank, Kotak Bank, Ashok Leyland, Canara Bank, IDBI Bank, Syndicate Bank, Axis Bank has given an expected rate of return more than 12%. Specifically Apollotyre (23.4875) rate of return is too high when compared to other companies those who showed the positive value of return.

TABLE: 7 -VALUE AT RISK - SENSEX SCRIPS

S.No.	Company	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>	S.No.	Company	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>
1	A.C.C.	3	5	-2	4	0.8	16	LARSEN & TOUBSO	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.0421053
2	JAIPRAKASH ASSOCIATES	5	5	0	0	0	17	MAHINDRA & MAHINDRA	3	5	-2	4	0.8
		95	95	0	0	0			97	95	2	4	0.0421053
3	BHARTI TELE VENTURES	3	5	-2	4	0.8	18	MARUTI UDYOG	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.0421053
4	BHEL	3	5	-2	4	0.8	19	NATIONAL THERMAL POWER	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.0421053
5	CIPLA LTD.	2	5	-3	9	1.8	20	ONGC	3	5	-2	4	0.8
		98	95	3	9	0.0947368			97	95	2	4	0.0421053
6	DLF LIMITED	4	5	-1	1	0.2	21	RANBAXY LAB.	2	5	-3	9	1.8
		96	95	1	1	0.0105263			98	95	3	9	0.0947368
7	GRASIM IND.	2	5	-3	9	1.8	22	RELIANCE	3	5	-2	4	0.8
		98	95	3	9	0.0947368			97	95	2	4	0.0421053
8	GUJARAT AMBUJA CEMENT	2	5	-3	9	1.8	23	RELIANCE COMMUNICATIONS	3	5	-2	4	0.8
		98	95	3	9	0.0947368			97	95	2	4	0.0421053
9	HDFC	3	5	-2	4	0.8	24	RELIANCE ENERGY	5	5	0	0	0
		97	95	2	4	0.0421053			95	95	0	0	0
10	HDFC BANK	3	5	-2	4	0.8	25	SATYAM COMPUTER	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.0421053
11	HINDALCO	4	5	-1	1	0.2	26	STATE BANK OF INDIA	3	5	-2	4	0.8
		96	95	1	1	0.0105263			97	95	2	4	0.04210526
12	HINDUSTAN LEVER	3	5	-2	4	0.8	27	TATA CONSULTANCY	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.04210526
13	ICICI BANK	3	5	-2	4	0.8	28	TATA MOTORS	2	5	-3	9	1.8
		97	95	2	4	0.0421053			98	95	3	9	0.09473684
14	INFOSYS TECHNOLOGIES	3	5	-2	4	0.8	29	TATA STEEL	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.04210526
15	ITC LTD.	3	5	-2	4	0.8	30	WIPRO LTD.	3	5	-2	4	0.8
		97	95	2	4	0.0421053			97	95	2	4	0.04210526
	Chi-square test value												27.5789474

Source: www.bseindia.com

**HYPOTHESIS TESTING FOR ASSESSING THE ACCURACY OF VAR FORECASTS OF 30 BSE SECURITIES**

Null Hypothesis : H0: p<sub>1</sub>=p<sub>2</sub>=p<sub>3</sub>=.....=p<sub>k</sub>

Alternate Hypothesis : H1: p<sub>1</sub>≠p<sub>2</sub>≠ p<sub>3</sub>≠.....≠p<sub>k</sub>

Chi- square test was computed by using the equation:

$\chi^2 = 27.57$  (from the above table)

Level of significance i.e.,  $\alpha = 0.10$

Degrees of freedom = (k-1)\*(2-1)

= 29\*1= 29

Tabulated value is **39.1**

Calculated value is **27.57**

**DECISION**

27.57 < 39.1

As per the decision rule the Hypothesis is accepted.

Current evidence is supporting our hypothesis and thus as per decision rule, our hypothesis that the proportion of losses exceeding computed VaR is same for all the 30 BSE stocks.

TABLE: 8-VALUE AT RISK - S&P CNX NIFTY SCRIPS

S.No.	Security Symbol	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>	S.No.	Security Symbol	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>
1	ABB	2	5	-3	9	1.8	16	HEROHONDA	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
2	ACC	3	5	-2	4	0.8	17	HINDALCO	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
3	AMBUJACEM	3	5	-2	4	0.8	18	HINDUNILVR	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
4	BHARTIARTL	5	5	0	0	0	19	ICICIBANK	5	5	0	0	0
		95	95	0	0	0			95	95	0	0	0
5	BHEL	3	5	-2	4	0.8	20	IDEA	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
6	BPCL	3	5	-2	4	0.8	21	INFOSYSTCH	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
7	CAIRN	2	5	-3	9	1.8	22	ITC	5	5	0	0	0
		98	95	3	9	0.09473684			95	95	0	0	0
8	CIPLA	5	5	0	0	0	23	LT	2	5	-3	9	1.8
		95	95	0	0	0			98	95	3	9	0.09473684
9	DLF	4	5	-1	1	0.2	24	M&M	2	5	-3	9	1.8
		96	95	1	1	0.01052632			98	95	3	9	0.09473684
10	DRREDDY	2	5	-3	9	1.8	25	MARUTI	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
11	GAIL	2	5	-3	9	1.8	26	NATIONALUM	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
12	GRASIM	3	5	-2	4	0.8	27	NTPC	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
13	HCLTECH	4	5	-1	1	0.2	28	ONGC	2	5	-3	9	1.8
		96	95	1	1	0.01052632			98	95	3	9	0.09473684
14	HDFC	3	5	-2	4	0.8	29	PNB	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
15	HDFCBANK	5	5	0	0	0	30	POWERGRID	2	5	-3	9	1.8
		95	95	0	0	0			98	95	3	9	0.09473684

Source: www.nseindia.com

VALUE AT RISK - S&P CNX NIFTY SCRIPS

S.No.	Security Symbol	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>	S.No.	Security Symbol	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>
31	RANBAXY	1	5	-4	16	3.2	41	SUNPHARMA	2	5	-3	9	1.8
		99	95	4	16	0.16842105			98	95	3	9	0.09473684
32	RCOM	2	5	-3	9	1.8	42	SUZLON	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
33	RELINFRA	5	5	0	0	0	43	TATACOMM	3	5	-2	4	0.8
		95	95	0	0	0			97	95	2	4	0.04210526
34	RELIANCE	2	5	-3	9	1.8	44	TATAMOTORS	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
35	RPL	2	5	-3	9	1.8	45	TATAPOWER	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
36	SAIL	3	5	-2	4	0.8	46	TASTASTEEL	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
37	SATYAMCOMP	2	5	-3	9	1.8	47	TCS	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
38	SBIN	5	5	0	0	0	48	UNITECH	5	5	0	0	0
		95	95	0	0	0			95	95	0	0	0
39	SIEMENS	2	5	-3	9	1.8	49	WIPRO	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
40	STER	3	5	-2	4	0.8	50	ZEEL	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
	Chi - square value												71.8421053

Source: www.nseindia.com

Hypothesis testing for assessing the accuracy of VaR forecasts of 50 S&P CNX Nifty securities:

Null Hypothesis : H0: p<sub>1</sub>=p<sub>2</sub>=p<sub>3</sub>=.....=p<sub>k</sub>

Alternate Hypothesis : H1: p<sub>1</sub>≠p<sub>2</sub>≠ p<sub>3</sub>≠.....≠p<sub>k</sub>

Chi- square test was computed by using the equation:

χ<sup>2</sup> = 71.84 (from the above table)

Level of significance i.e., α = 0.10

Degrees of freedom = (50-1)\*(2-1)

= 49\*1= 49

Tabulated value is 65.54

Calculated value is 71.84

DECISION

71.84 > 65.54

As per the decision rule the Hypothesis is rejected.

Current evidence is not supporting our hypothesis and thus as per decision rule, our hypothesis that the proportion of losses exceeding computed VaR is not the same for all the 50 NSE stocks.

TABLE: 9-VALUE AT RISK - CNX NIFTY SCRIPS

S.No.	Security Symbol	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>	S.No.	Security Symbol	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>
1	ANDHRABANK	3	5	-2	4	0.8	16	RELCAPITAL	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
2	APOLLTYRE	3	5	-2	4	0.8	17	ULTRACEMCO	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
3	ASHOKLEY	3	5	-2	4	0.8	18	CORPBANK	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
4	ASIANPAINT	2	5	-3	9	1.8	19	CUMMINSIND	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
5	AUROPHARMA	2	5	-3	9	1.8	20	INDHOTEL	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
6	AVENTIS	2	5	-3	9	1.8	21	CONCOR	1	5	-4	16	3.2
		98	95	3	9	0.09473684			99	95	4	16	0.16842105
7	BANKBARODA	4	5	-1	1	0.2	22	I-FLEX	2	5	-3	9	1.8
		96	95	1	1	0.01052632			98	95	3	9	0.09473684
8	BANKINDIA	3	5	-2	4	0.8	23	GMRINFRA	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
9	BEL	1	5	-4	16	3.2	24	IDBI	4	5	-1	1	0.2
		99	95	4	16	0.16842105			96	95	1	1	0.01052632
10	BHARATFORG	2	5	-3	9	1.8	25	IFCI	3	5	-2	4	0.8
		98	95	3	9	0.09473684			97	95	2	4	0.04210526
11	BIOCON	2	5	-3	9	1.8	26	MCDOWELL-N	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
12	PFC	3	5	-2	4	0.8	27	IOB	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
13	CADILAHC	2	5	-3	9	1.8	28	JPASSOCIAT	4	5	-1	1	0.2
		98	95	3	9	0.09473684			96	95	1	1	0.01052632
14	CANBK	4	5	-1	1	0.2	29	KOTAKBANK	4	5	-1	1	0.2
		96	95	1	1	0.01052632			96	95	1	1	0.01052632
15	CHENNPETRO	3	5	-2	4	0.8	30	LICHSGFIN	1	5	-4	16	3.2
		97	95	2	4	0.04210526			99	95	4	16	0.16842105

Source: www.nseindia.com

VALUE AT RISK - CNX NIFTY SCRIPS

S.No.	Security Symbol	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>	S.No.	Security Symbol	f <sub>o</sub>	f <sub>e</sub>	f <sub>o</sub> -f <sub>e</sub>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup>	(f <sub>o</sub> -f <sub>e</sub> ) <sup>2</sup> /f <sub>e</sub>
31	LUPIN	1	5	-4	16	3.2	41	IDFC	3	5	-2	4	0.8
		99	95	4	16	0.16842105			97	95	2	4	0.04210526
32	MOSERBAER	3	5	-2	4	0.8	42	TECHM	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
33	MPHASIS	2	5	-3	9	1.8	43	SYNDIBANK	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
34	JINDALSTEL	2	5	-3	9	1.8	44	TTML	2	5	-3	9	1.8
		98	95	3	9	0.09473684			98	95	3	9	0.09473684
35	NIRMA	1	5	-4	16	3.2	45	JSWSTEEL	3	5	-2	4	0.8
		99	95	4	16	0.16842105			97	95	2	4	0.04210526
36	PATNI	1	5	-4	16	3.2	46	UNIONBANK	4	5	-1	1	0.2
		99	95	4	16	0.16842105			96	95	1	1	0.01052632
37	HDIL	4	5	-1	1	0.2	47	AXISBANK	4	5	-1	1	0.2
		96	95	1	1	0.01052632			96	95	1	1	0.01052632
38	ABIRLANUVO	3	5	-2	4	0.8	48	VIJAYABANK	3	5	-2	4	0.8
		97	95	2	4	0.04210526			97	95	2	4	0.04210526
39	RNRL	3	5	-2	4	0.8	49	INGVYSYABK	2	5	-3	9	1.8
		97	95	2	4	0.04210526			98	95	3	9	0.09473684
40	RAYMOND	1	5	-4	16	3.2	50	WOCKPHARMA	2	5	-3	9	1.8
		99	95	4	16	0.16842105			98	95	3	9	0.09473684
	Chi - square value												74.7368421

Source: www.nseindia.com

**HYPOTHESIS TESTING FOR ASSESSING THE ACCURACY OF VAR FORECASTS OF 50 CNX NIFTY JUNIOR SECURITIES**

Null Hypothesis : H<sub>0</sub>: p<sub>1</sub>=p<sub>2</sub>=p<sub>3</sub>=.....=p<sub>k</sub>

Alternate Hypothesis : H<sub>1</sub>: p<sub>1</sub>≠p<sub>2</sub>≠ p<sub>3</sub>≠.....≠p<sub>k</sub>

Chi- square test was computed by using the equation:

χ<sup>2</sup>= 74.74 (from the above table)

Level of significance i.e., α = 0.10

Degrees of freedom = (50-1)\*(2-1)

= 49\*1= 49

Tabulated value is 65.54

Calculated value is 74.74

**DECISION RULE**

→ Accept the hypothesis if calculated value < tabulated value

→ Reject the hypothesis if calculated value > tabulated value

**DECISION**

74.74 > 65.54

Hypothesis rejected

Current evidence is not supporting our hypothesis and thus as per decision rule, our hypothesis that the proportion of losses exceeding computed VaR is not same for all the 50 NSE stocks.

**CONCLUSION**

This paper intended to analyze the risk and return of stocks included in Sensex and Nifty for one year period from 2007 to 2008. Out of 30 securities in BSE Sensex, 7 individual securities showed a positive value of expected rate of return. Out of 50 stocks in S&P CNX Nifty, 30 individual securities showed a positive value of expected rate of return. Two of the securities in BSE Sensex have no risk at 90% significance level and in S&P CNX Nifty 7 of the securities have no risk at 90% level of significance. As far Sensex is concerned proportion of losses exceeding computed VaR is same for all the stocks, which means that the risk complexion of all the 30 stocks is alike. But in case of S&P CNX Nifty, there were significant variances in the proportion of losses exceeding computed VaR, whereby one can understand that the risks associated with the NSE stocks differ. And also in case of CNX Nifty, there were significant variances in the proportion of losses exceeding computed VaR. Every investor should analyze the risk associated with expected return of his investment preferences. To the extent possible the investor should diversify his investment alternatives which will help him/her to maximize the associated return.

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## PUBLIC-PRIVATE KEY PAIR MANAGED BY CENTRALIZED OFFLINE SERVER IN MISSION-CRITICAL NETWORKS

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### ABSTRACT

*Mission-Critical networks show great potential in assisted living system, automotive networks, emergency rescue and disaster recovery system, military applications, critical infrastructure monitoring system. To build a secure communication system in that network, usually the first attempt is to employ cryptographic keys. Cryptographic key management is challenging due to the things like unreliable communications, limited bandwidth, network dynamics, large scale, resource constraints in wireless ad-hoc communications. Public-Private key pair in Mission-Critical networks to fulfill the required attributes of secure communications, such as data integrity, authentication, confidentiality, non-repudiation and service availability. So we go for an Self-Contained Public Key-management scheme called Scalable method of cryptographic key management(SMOCK), which achieves almost Zero communication overhead for authentication and offers high service availability and also allows a mobile node to contain all of the necessary information for authentication locally. SMOCK provides a small number of cryptographic keys are stored offline at individual nodes before they are deployed in the network. The scheme allows a combinatorial design of Public-Private key pairs, to use good scalability in terms of the number of nodes and storage space. That means nodes combine more than one key pair to encrypt and decrypt messages.*

### KEYWORDS

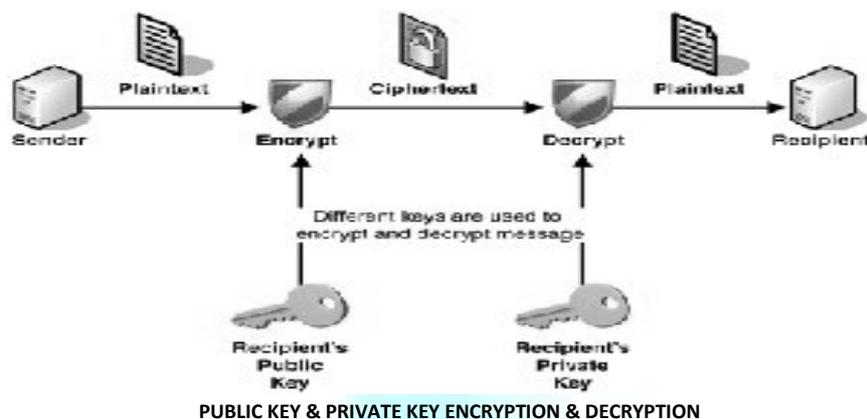
Identity-Based Encryption, pairwise key distribution schemes, Rivest Shamir and Adleman (RSA), SMOCK (Scalable method of cryptographic key management), symmetric key techniques.

### INTRODUCTION TO THE PUBLIC KEY INFRASTRUCTURE (PKI)

It has grown more important to ensure the confidentiality and integrity for data communication where an organization's network contains intranets, extranets, and Internet Web sites. Because of the connectivity of networks today, an organization's network is exposed to unauthorized users who could possibly attempt to access and manipulate mission critical data or the confidential data of its clients. The need to authenticate the identities of users, computers and even other organizations, has led to the development of the public key infrastructure (PKI). A public key infrastructure (PKI) can be defined as a set of technologies which control the distribution and utilization of unique identifiers, called public and private keys, through the utilization of digital certificates. The set of technologies that constitute the PKI is a collection of components, standards and operational policies. The PKI process is based on the use of public and private keys to provide confidentiality and integrity of an organization's data as it is transmitted over the network. When users partake in the PKI, messages are encoded using encryption, and digital signatures are created which authenticate their identities. The recipient of the message would then decrypt the encoded message. For a PKI implementation to operate, each computer in the communication process must have a public key and private key. The public key and private key pair is used to encrypt and decrypt data, to ensure data confidentiality. When two parties use a PKI, each one obtains a public key and a private key, with the private kept only being known by the owner of that particular key. The public key on the other hand is available to the public. Before delving into the components and operations of the PKI, let's first look at what a properly designed and implemented PKI achieves:

- CONFIDENTIALITY:** A PKI implementation ensures confidentiality of data transmitted over the network between two parties. Data is protected through the encryption of messages, so even in cases where the data is intercepted; the data would not be able to be interpreted. Strong encryption algorithms ensure the privacy of data. Only the parties which possess the keys would be able to decode the message.
- AUTHENTICATION:** The PKI also provides the means by which the sender of the data messages and the recipient of the data messages can authenticate the identity of each other. Digital certificates which contain encrypted hashes are used in authentication, and to provide integrity.
- INTEGRITY:** Integrity of data is assured when data has been transmitted over the network, and have not been fiddled with, or modified in any manner. With PKI, any modification made to the original data, can be identified.

•**Non-repudiation:** In PKI, non-repudiation basically means that the sender of data cannot at a later stage deny sending the message. Digital signatures are used to associate senders to messages. The digital signature ensures that the senders of messages always sign their messages. This basically means that a particular person cannot, at a later stage, deny sending the message.



### PKI COMPONENTS

In a PKI, there are several different entities or components. These components may be implemented separately, but are commonly integrated and delivered through what are called Certificate Servers.

1. Certificate Authority (CA) is the most fundamental component that will authorize and create digital certificates. A certificate authority (CA) server issues, manages, and revokes certificates. The CA's certificate (i.e., public key) is well known and trusted by all the participating end entities. The CA can delegate its authority to a subordinate authority by issuing a CA certificate, creating a certificate hierarchy. This is done for administration (e.g., different issuance policies) and performance reasons (e.g., single point of failure and network congestion). The ordered sequence of certificates from the last branch to the root is called a certificate chain. Each certificate contains the name of that certification's issuer (i.e., this is the subject name of the next certificate in the chain). A self-signed certificate means that the signer's public key corresponds to its private key (i.e., the X.509v3 issuer and subject lines are identical).

2. The second core component of a PKI is the Registration Authority (RA), which provides the mechanism and interface for submitting users' public keys and identifying information in a uniform manner, in preparation for signing by the CA.

3. The third component is a Repository (Directory Server) in which certificates and certificate revocation lists are stored in a secure manner for later retrieval by systems and users. Lightweight Directory Access Protocol (LDAP) was originally designed to make it possible for applications running on a wide array of platforms to access X.500 directories. LDAP is defined by RFCs 1777 and 1778 as an on-the-wire bit protocol (similar to HTTP) that runs over TCP/IP. It creates a standard way for applications to request and manage directory information (i.e., no proprietary ownership, or control of the directory protocol). The directory entries are arranged in a hierarchical tree-like structure that reflects political, geographic, and/or corporation boundaries.

4. PKI Applications are those use public-key technology. In most cases, the application would provide underlying cryptographic functions (e.g., public/private key generation, digital signature, and encryption) and certificate management. Certificate management functions include creating certificate requests, revocations, and the secure storage of a private key(s). Examples of PKI applications include Netscape's SSL 3.0 browser/server, Deming's Secure Messenger, and GlobeSet's Secure Electronic Transaction (SET) Wallet, Microsoft Outlook mail system.

### PKI COMPONENT SECURITY REQUIREMENTS

PKI components each share a set of security requirements (i.e., baseline) with each other. The baseline corporate PKI security requirements are as follows:

- Reliable software (i.e., a comfortable level of assurance that security software is implementing the cryptographic controls properly).
- Secure/trusted communications between components (e.g., IPSec, SSL 3.0).
- PKI specific security policies that are derived from the existing set of corporate security policies.

Most PKI software/hardware is built upon cryptographic toolkits (e.g., RSA's B-Safe). The application that calls the lower level functions in the toolkit is still prone to human errors. Every other month Microsoft and Netscape release bug fixes for their Internet product sets. If the browser wars continue, there will be shorter quality assurance cycles to meet the current time to market constraints, hence produce a lower quality of software. PKI components require authenticated and private communication among each other. This prevents active or passive threats (e.g., eavesdropping, spoofing) from occurring. Most current implementation of PKI components supports SSL 3.0. Each component has a security criterion it must meet to be part of a PKI. This criterion is based on the level of protection necessary to perform the business objectives within the acceptable level of risk. The security mechanisms used to meet this criterion usually falls into physical, platform, network, and application categories. These categories are not all included in the PKI applications and have to be supplemented. Examples of these are network firewalls, disabling NFS exports, authenticated naming services, and tight administrator controls (e.g., root user).

### CERTIFICATE AUTHORITY

The certificate authority security requirements are:

- Certificate generation, issuance, inquiries, revocation, renewal, and storage policies.
- Certification Practice Statement (CPS).
- Certificate attributes or extension policies.
- Certificate administration, audit journal, and data recovery/life-cycle support.
- Secure storage of private keys.
- Cross certification agreements.

The applicability and/or usage of the certificate the CA manages are defined in the Certificate Policy (CP). A security policy must exist for each CA function (e.g., generation, issuance, revocation list latency, etc.). These policies are the foundation upon which all the CA security related activities are based on Certification Practice Statement (CPS) is a detailed statement by the CA as to its certificate management practices. The certificate end entities and subscribers need to be well aware of these practices before trusting the CA. The CPS also allows the CA to indemnify itself to protect its relationships.

One of the major improvements to version 3 of X.509 is the ability to allow flexible extensions to the certificate structure. These extensions include additional key and policy information, user and CA attributes, and certification path constraints. The CA must document, by way of a policy, the certificate attributes and extensions it supports. In addition, to allow interoperability outside the corporation, one must register the extension object identifiers (OID) with the American National Standards Institute (ANSI). The CA must maintain an audit journal of all key management operations it performs. All certificate management functions must be audited (e.g., issuance, revocation, etc.) in case of a dispute. In conjunction with this auditing function, a data recovery and certificate life cycle plan must also exist. The CA administrator interface must enforce the least privilege principal for all administrator actions. The certificate authority must provide for the adequate protection of the private key that it uses to sign certificates. The machine that the CA runs on must be protected from network and physical intrusions. Optionally, the CA's private key used to sign certificates can be stored in a tamperproof hardware module (e.g., meets FIPS PUB 140-1 level 3). Cross-

certification certificates are issued by CAs to form a non-hierarchical trust path. Two certificates are necessary for a mutual trust relationship (i.e., forward, and reverse directions). These certificates have to be supported by an agreement between the CAs. A cross-certification agreement details the obligation of liability between partners if a certificate turns out to be false or misleading.

**DIRECTORY SERVER**

The directory server security requirements are as follows:

- Supports network authentication through IP address/DNS name, and user authentication through LDAP user name and password, or a X.509 version 3 public-key certificate.
- Controls the users' ability to perform read, write, search, or compare operations down to the attribute level.
- Provides message privacy (SSL) and message integrity for all communications.

The directory server contains corporate and user personal attribute information. Access to this information must be controlled at the most granular level possible. Directory administrators must be able to restrict particular users from performing specific directory operations (e.g., read, write, search, and compare). Authentication must support conventional username/passwords and/or certificates. Additional filtering should be provided using IP address/DNS name. Network access to the directory server must be able to be protected between all PKI components.

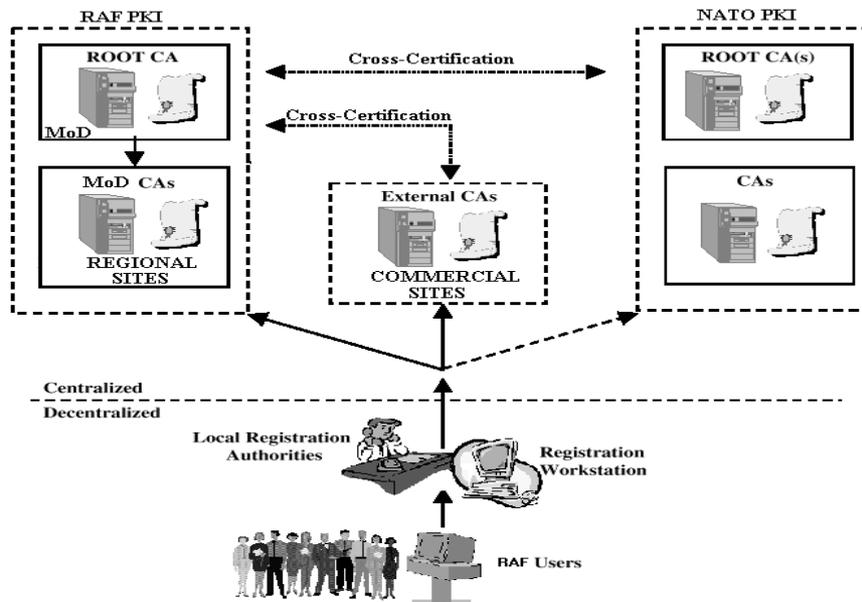
**PKI CLIENTS**

All PKI clients, at a minimum, must be able to generate digital signatures and manage certificates. PKI client requirements are as follows:

- Generate a public/private key pair.
- Create a certificate request (PKCS#10).
- Display certificate.
- Verify certificate.
- Delete certificate.
- Enable or disable multiple certificates.
- Request a certificate revocation.
- Secure storage of certificates (e.g., password, and hardware).
- Secure exporting certificates (e.g., PKCS #12).
- Select algorithm, key strength, and password controls.
- Configure security options (e.g., sign/encrypt whenever possible).

The process begins with a PKI client generating a public/private key pair locally. The software used to generate the public/private key pair must use a non-deterministic algorithm. Once the key pair is generated, the public portion needs to be bound inside a certificate structure. The PKI client must then generate a certificate request adhering to the PKCS#10 syntax and submit that information to a CA. Once the CA fulfils the request, the message response sent back to the client is in PKCS#7 syntax (i.e., signed envelope). All network traffic is kept private between the client and the CA. The PKI client must have the ability to manage multiple certificates. This includes viewing the certificate structure (e.g., subject, issuer, serial number, fingerprint, and validity dates); deleting it, if necessary; choosing (i.e., enabling) what certificate to use or query the user; or requesting the CA to revoke it. A large portion of public cryptography is based on the protection of the private key. The PKI client must protect their private key commensurate with the risk associated with the loss of all the transactions it processes. This will require encrypted storage of the key using an application authentication challenge (e.g., organization compliant password), or hardware token or smart card, and the user physically protecting their desktop (e.g., password protected screen saver). Due to the infancy of this technology, certificates are bound to the PKI client application software and hence the host that the software resides on. An emerging public key cryptographic standard (PKCS) called personal information exchange syntax standard (i.e., PKCS #12) details the transfer syntax for personal identity information. This includes private keys, certificates, miscellaneous secrets, and extensions. This will allow PKI clients to import and export personal identity information across multiple platforms and applications. The most secure method includes a privacy and integrity mode that requires the source and destination platforms to have trusted public/private key pairs available for digital signatures and encryption. The least secure method protects personal identity information with encryption based on a password.

FIG. 1: PKI ARCHITECTURE



**EXISTING SYSTEM**

In secure communication, wireless sensor networks use symmetric key techniques. In symmetric key techniques, secret keys are predistributed among nodes before their deployment. A challenge of the key distribution scheme is to use small memory size to establish secure communication among a large number of nodes and achieve good resilience. Public-key (certificate)-based approaches were originally proposed to provide solutions to secure communications for the Internet, where security services rely on a centralized certification server. The certificate-based approaches to ad-hoc networks and present a distributed public-key-management scheme for ad-hoc networks, where multiple distributed certificate authorities are used. To sign a certificate, each authority generates a partial signature for the certificate submits the partial signature to a coordinator that calculates the signature from the partial signatures.

**DISADVANTAGES**

Lack of support for authentication and confidentiality. Single-point failure of the centralized server is able to paralyze the whole network, which makes the network extremely vulnerable to compromises and denial-of-service attacks. Total number of keys held by each user is  $O(n)$  traditional key-management schemes.

**PROPOSED SYSTEM**

In this system we propose to support secure communications with the attributes of data integrity, authentication, confidentiality, no repudiation, and service availability. To build a secure communication system, usually the first attempt is to employ cryptographic keys. In SMOCK, let us assume a group of people in an incident area, who want to exchange correspondence securely among each other in a pair-wise fashion. The key pool of such a group consists of a set of private-public key pairs, and is maintained by an offline trusted server. Each key pair consists of two mathematically related keys. The  $i$ th key pair in the key pool is represented by  $(priv_i, pub_i)$ . To support secure communication in the group, each member is loaded with all public keys of the group and assigned a distinct subset of private keys. Each person keeps a predetermined subset of private keys, and no one else has all of the private keys in that subset. For a public-private key pair, multiple copies of the private key can be held by different users. A message is encrypted by multiple public keys, and it can only be read by a user who has the corresponding private keys.

**ADVANTAGES**

1. To Support secure communications among the users in Mission-Critical Wireless Ad-Hoc Networks.
2. In SMOCK-management scheme, which scales logarithmically with network size  $O(\log n)$ , with respect to storage space.
3. In SMOCK to provide two encryption and decryption standard. In Decryption using a private key set.
4. Key Management System provide at offline-line centralized server.

**SYSTEM ARCHITECTURE**

A system architecture or systems architecture is the conceptual design that defines the structure and/or behavior of a system. An architecture description is a formal description of a system, organized in a way that supports reasoning about the structural properties of the system. It defines the system components or building blocks and provides a plan from which products can be procured, and systems developed, that will work together to implement the overall system.

FIG.2: SYSTEM ARCHITECTURE

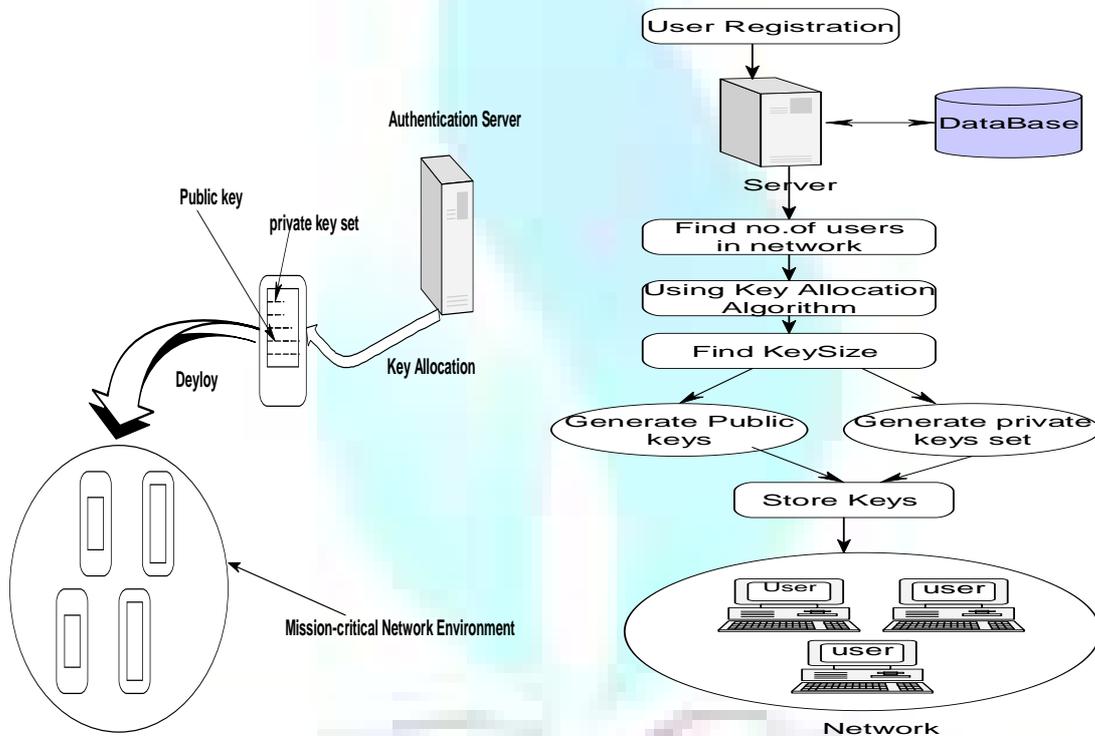


FIG.3

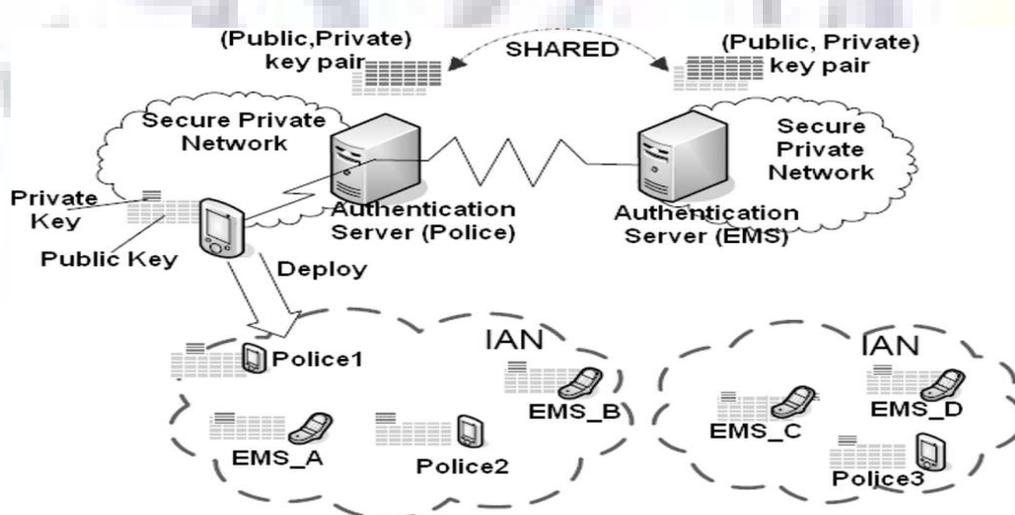


Fig.3. Two agencies [police department and emergency medical service (EMS)] maintain the same private and public key pool through a secure connection. Before deployment, agencies predistribute keys to devices. After devices are dispatched into the incident areas, it is costly and unsafe to communicate with agencies. So all of the devices authenticate messages according to the predistributed keys.

#### ALGORITHM DESIGN

##### KEY ALLOCATION ALGORITHM

This algorithm calculates the minimum number of memory slots to store public keys in order to support the secure communication among  $n$  users.

1. Initialize the number of users  $n$ ;

2. Initialize  $j=2, a=1$ ;

3. initialize  $key=j$ ;

4. loop:

for( $i=1; j; i \leq n$ )

satisfied condition

if( $n \leq a$ )

satisfied condition

return key;

else

Not Satisfied

$a=a+j$ ;

increment  $i, j$ ;

End loop;

Based on the key value the number of public keys generated.

##### PRIVATE KEY SET ALLOCATION TO USERS

1. Initialize the number of keys  $n$  users;

2. Initialize  $i=1, k=2, id=1, j=k$ ;

3. store private keys in list.

4. loop

for( $i; i \leq nusers; i++$ )

satisfied condition

loop

for( $j; j \leq nusers; j++$ )

satisfied condition

get  $i$  position value from list

get  $j$  position value from list

allocate that  $i, j$  position key values to ( $id$ ) user

$id++$ ;

end loop;

$k++$ ;

end loop;

##### RSA ALGORITHM

###### KEY GENERATION

1. Generate two large prime numbers,  $p$  and  $q$
2. Let  $n = p q$
3. Let  $m = (p-1)(q-1)$
4. Choose a small number  $e$ , co-prime to  $m$
5. Find  $d$ , such that  $de \% m = 1$

Publish  $e$  and  $n$  as the public key.

Keep  $d$  and  $n$  as the secret key.

###### Key Generation

- 1) Generate two large prime numbers,  $p$  and  $q$
- 2) Let  $n = p q$
- 3) Let  $m = (p - 1) (q - 1)$
- 4) Choose a small number,  $e$  co-prime to  $m$
- 5) Find  $d$ , such that  $de \% m = 1$
- 6) Generate Public key, Secret key.

##### SYSTEM IMPLEMENTATION

Implementation is the stage in the project where the theoretical design is turned into a working system and is giving confidence on the new system for the users, which it will work efficiently and effectively. It involves careful planning, investigation of the current System and its constraints on implementation, design of methods to achieve the change over, an evaluation, of change over methods. In our implementation, nodes receive their subset of private keys, unique SMOCK IDs and all SMOCK public keys via the SSL channel from a trusted authority before secure communication. When a node wants to send a message to another node (the receiver), it sends a plain-text message (along with its SMOCK ID). The receiver then encrypts its SMOCK ID with the sender's public keys, and sends the encrypted message to the sender. The sender can then encrypt the message by using the receiver's SMOCK keys. And the receiver can then decrypt the message using its SMOCK private keys. We measured the encryption and decryption process time that was taken to encrypt and decrypt a message.

##### IMPLEMENTATION PLAN

The implementation can be preceded through Socket in java but it will be considered as one to all communication. So java will be more suitable for platform independence and networking concepts. For maintaining the load we go for SQL-server as database back end. In existing system, single-point failure of the centralized server is able to paralyze the whole network, which makes the network extremely vulnerable to compromises and denial-of-service attacks. we need a self-contained key-management scheme, which allows a mobile node to contain all of the necessary information for authentication locally. A realistic assumption about mission-critical applications is that before mobile devices are dispatched to an incident area, they are able to communicate securely with the trusted authentication server in their domain center, and get prepared before their deployment.

##### CONCLUSION

We depict a self-contained key-management scheme, which requires significantly less key storage space than traditional schemes and almost zero communication overhead for authentication in a mission-critical wireless ad-hoc network with nodes. The scheme also achieves controllable resilience against node compromise by defining required benchmark resilience. We generalized the traditional public-key-management schemes. And in SMOCK turned out to be

Encryption

$$C = P^e \% n$$

Decryption

$$P = C^d \% n$$

$x \% y$  means the remainder of  $x$  divided by  $y$

the traditional public-key infrastructure. We can also see that SMOCK fulfills the secure communication requirements in terms of integrity, authentication, confidentiality, no repudiation, and service availability.

### SCOPE FOR FUTURE ENHANCEMENT

We can further extend the idea of SMOCK to other applications, such as broadcast authentication, Message signing and verification use all the hash chains associated with the senders' identity. With the combinatorial design, we expect better scalability and less delay than traditional broadcast authentication schemes. We will investigate this deeply in future works.

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**CORPORATE SOCIAL RESPONSIBILITY IN INDIAN TEXTILE INDUSTRY****M. GURUSAMY****ASST. PROFESSOR****DEPARTMENT OF MANAGEMENT STUDIES,****PAAVAI COLLEGE OF ENGINEERING****NAMAKKAL – 637 018****DR. N. RAJASEKAR****PROFESSOR AND HEAD****DEPARTMENT OF BUSINESS ADMINISTRATION****THIAGARAJAR COLLEGE****MADURAI – 625 009****ABSTRACT**

India has one of the world's richest traditions of CSR (Corporate Social Responsibility). CSR is a concept that organizations, especially (but not only) corporations, have an obligation to consider the interests of customers, employees, shareholders, communities, and ecological considerations in all aspects of their operations. The ways in which a textile firm can fulfill its responsibility towards various parties are similar to those of firms in other industries, as is evident from the employees, shareholders, the government, customers, investors, suppliers, competitors, society, and environment. Burberry is an organization that strives to fulfill its social responsibility. It provides its employees with safe working conditions, fair policies regarding appointment and remuneration and ethical workplace standards. There is no bias towards age, gender, color or marital status in its employee policies. As part of its social responsibility campaign, Welspun have developed the concept of 5 Es – Enrichment of mind, enrichment of body, education, empathy, and empowerment of women. It undertakes several projects in each of these areas. Arvind Mills strongly believes that in participating in the development of the society, which helps in its development. It has developed an environmental policy with a view to protecting the environment from the negative effects of its operations. It strives for optimum utilization of energy, cotton and water. The initiative assumes significance as India is a developing country with an aspiring consumption drive and vast untapped markets, but appears to be largely divorced from emerging sensitivities on sustainable production processes, consumption, retail, policies and environmental hazards. India is a developing country with an aspiring consumption drive and vast untapped markets, but appears to be largely divorced from emerging sensitivities on sustainable production processes, consumption, retail, policies and environmental hazards. The sector is a big consumer of natural resources. Companies are becoming increasingly aware of their responsibilities towards the various stakeholders associated with them.

**KEYWORDS**

CSR, Corporate, Textile, Industry.

**INTRODUCTION**

India has one of the world's richest traditions of CSR (Corporate Social Responsibility). This report focuses on the country's largest companies, capturing the strengths and weaknesses of current practice, and identifying priorities for future action. While much has been done in recent years to raise awareness on social responsibility as a business imperative, CSR in India has yet to achieve critical mass. If this goal is to be realized then the CSR movement will have to become much more business-like—with companies starting to set clear objectives, making real investments, measuring actual returns, and reporting performance openly. To understand the current status of CSR in India, it is important first to map out the landscape and identify the main families of corporate responsibility. For long-established industrial dynasties, such as the Birlas and the Tatas, concepts of nation-building and trusteeship have been alive in their operations decades long before CSR become a popular cause. Alongside these are the leading Indian companies with strong international shareholdings, such as Hero Honda, HLL (Hindustan Lever Ltd), ITC, and Maruti Udyog, where local dynamics fuse with the business standards of the parent or partner. Another tradition emerges from the public sector enterprises, such as BHEL (Bharat Heavy Electricals Ltd), HDFC (Housing Development Finance Corporation), NTPC (National Thermal Power Corporation), and ONGC (Oil and Natural Gas Corporation), where social obligations remain an integral part of their business despite the march of privatization. And then there is the new generation of enterprises that has surged on the back of knowledge based globalization, such as Dr Reddy's, Infosys, Ranbaxy, and Wipro, where less emphasis is on minimizing negative impacts and more on maximizing the positive spill-over effects of corporate development.

**SOCIAL RESPONSIBILITY**

Social responsibility is an organization's obligation to maximize its positive impact and minimize its negative impact on the society. In other words, it is the concept that businesses should be actively concerned with the welfare of the society at large. The concept of social responsibility is applicable to individuals and governments as well as organizations. The social responsibility of an organization is referred to as 'corporate social responsibility'. Social responsibility can be broadly divided into two parts: human responsibility and environmental responsibility.

**HUMAN RESPONSIBILITY**

Human responsibility refers to the responsibility of the organization towards the various parties associated with it, which are known as 'stakeholders' in business parlance. These parties include employees, shareholders, the government, customers, investors, suppliers, competitors and the society at large.

**ENVIRONMENTAL RESPONSIBILITY**

Environment responsibility refers to the organization's responsibility towards environment protection. The concept of social responsibility holds that an organization should work in a manner in which the interests of the stakeholders are protected or, at the very least, they are not adversely affected. It holds that the organization should work in an ethical manner and work in the best interests of the various parties associated with it. The realm of social responsibility extends beyond the legal responsibilities of an organization. It is voluntarily fulfilled by the organization.

**CORPORATE SOCIAL RESPONSIBILITY (CSR)**

The concept of CSR originated in the 1950s in USA and the concept came into prominence in public debate during the 1960s and 1970s. US had lots of pressing social problems like poverty, unemployment, race, urban blight and pollution. Corporate social responsibility became a matter of utmost importance for diverse groups demanding change in the business. During 1980s to 2000, corporations generally recognized a responsibility to society and weighed against the demands of being competitive in a rapidly changing global economy. The concept of CSR is expressed as the voluntary assumption of responsibilities that go beyond the economic and legal responsibilities of business firms. CSR is a concept that organizations, especially (but not only) corporations, have an obligation to consider the interests of customers, employees, shareholders, communities, and ecological considerations in all aspects of their operations. This obligation is seen to extend beyond their statutory obligation to comply with legislation. The concept of corporate social responsibility has been criticized by certain experts, who

believe that it is a cynical and selfish idea. They are of the opinion that corporate undertaking projects for social welfare only because of the increase in reputation that they would get due to them.

## CSR IN THE TEXTILE INDUSTRY

Like the firms in other industries, textiles firms are also realizing their responsibility towards the various parties associated with them and the environment. However, the ways by which different organizations choose to fulfill their social responsibility might be different. The ways in which a textile firm can fulfill its responsibility towards various parties are similar to those of firms in other industries, as is evident from the points mentioned below:

### 1. TOWARDS EMPLOYEES:

- ✓ By providing a competitive and challenging work environment to the employees.
- ✓ By having ethical recruitment, remuneration, promotion and other policies
- ✓ By providing opportunities to the employees to voice their opinion and complaints and have an effective policy for the solution of these complaints.
- ✓ Ensuring a safe working environment for the employees.
- ✓ Having fair policies for the solution of employee disputes.

### 2. TOWARDS SHAREHOLDERS:

- ✓ By representing a fair picture of the company's financial position and profit/loss to the shareholders
- ✓ By paying them a fair rate of dividend

### 3. TOWARDS THE GOVERNMENT:

- ✓ By providing the necessary information to the government as and when required
- ✓ By making payment of the due taxes and duties at the proper time
- ✓ By abiding by the laws and regulations of the area in which the firm operates.
- ✓ Contributing to the economy through exports.

### 4. TOWARDS CUSTOMERS:

- ✓ By providing quality products to the customers at reasonable prices
- ✓ By undertaking constant research and development and coming up with innovative and more useful products from time to time

### 5. TOWARDS INVESTORS:

- ✓ By giving the investors a true and fair picture of the financial condition of the business.
- ✓ By giving them due returns on the investment made by them.

### 6. TOWARDS SUPPLIERS

- ✓ Making competitive payment to the suppliers for the products purchased from them.
- ✓ Maintaining a good relationship with the suppliers.

### 7. TOWARDS COMPETITORS:

- ✓ Indulging in ethical and healthy competition

### 8. TOWARDS SOCIETY:

- ✓ Undertaking community development and area development programmes.
- ✓ Undertaking charity work for the underprivileged sections of the society.
- ✓ By creating job opportunities.

### 9. TOWARDS ENVIRONMENT:

- ✓ Ensuring the purchase of environment-friendly supplies.
- ✓ Ensuring a pollution-free process of production
- ✓ Having an efficient system for the disposal of waste
- ✓ Making the product and the process of production as environment-friendly as possible.
- ✓ Adopting eco-friendly packaging.

The following are ways in which a few leading firms dispose of their social responsibility:

## BURBERRY

Burberry is a leading manufacturer of apparel and other fashion accessories like perfumes and handbags since 1856. The checks pattern is the unique distinguishing feature of Burberry products. It is a well-known brand all over the globe. It is an organization that strives to fulfill its social responsibility. It provides its employees with safe working conditions, fair policies regarding appointment and remuneration and ethical workplace standards. There is no bias towards age, gender, color or marital status in its employee policies. The staff of Burberry is specially trained in safety conditions at the workplace. It has specified health and safety standards, which are audited annually. In its UK branch, it has launched a free support cell for its employees. This cell offers medical and legal advice as well as counseling to employees and their family members, wherein complete confidentiality is maintained. It has donated money for various charitable causes such as fashion and textile education, medical research, support of orphaned children, support of hurricane victims, and for charitable artistic events. It undertakes strict quality control and research and development to provide products of the best quality to its customers. It undertakes environmental reviews of its operations periodically and ensures that the environment is not adversely affected by its activities. Measures have been taken in some of their outlets for energy conservation and reuse of packing material.

## WELSPUN

Welspun is a group that is chiefly engaged in the production of textiles. It is also engaged in the production of other products such as electricity and cold storage. It carries on operations in 50 countries of the world. It strongly believes in the fulfilling its social responsibility. As part of its social responsibility campaign, it has developed the concept of 5 Es – Enrichment of mind, enrichment of body, education, empathy, and empowerment of women. It undertakes several projects in each of these areas. It believes that enrichment of the mind leads to nurturing of the body. For enrichment of the mind, it regularly conducts workshops on yoga and nutrition for the soul. These classes are generally conducted for the benefit of employees and their families. For the purpose of enrichment of the body, it undertakes several activities such as arranging regular visits by doctors and holding periodic medical camps for its employees. It provides the facility of a gym to all employees.

Welspun also makes a significant contribution towards the spread of education. It contributes regularly for the education of children belonging to the underprivileged section of the society. Moreover, representatives from the organization communicate periodically with these children to get an idea of the progress made. In its endeavor to spread the light of education, Welspun has established two educational institutions – Welspun Vidhya Mandir and Welspun Anganwadi in Kutchh, Gujarat. Welspun Vidhya Mandir is a school for children upto Standard X, while Welspun Anganwadi is a pre-primary school. Both these educational institutions admit the students of their employees as well as children from the local community. Keeping in view the concept of empathy, it undertakes a number of projects in the interest of the society at large. The organization periodically makes contributions to schools for the visually impaired. It provides employment to the orphans and others associated with visually impaired people. It gifts products made by such people to its employees on occasions such as birthdays. The firm has also undertaken a forestation drive in the sandy area of Anjar in Gujarat. It also organizes periodic blood donation camps. The blood collected in these camps is used for the benefit of people from the economically weaker section of the society and people suffering from critical diseases like cancer. For the purpose of empowerment of women too, it has initiated several activities like Project Kishori and Project Lijjat. Under Project Kishori, it

organizes computer classes for women who intend to take up government jobs. Under Project Lijjat, it organizes training programmes for rural women in the making of Papads, with the view of providing employment to them and strengthening their financial condition.

### ARVIND MILLS

Arvind Mills is a leading Indian producer of textiles since 1931. Founded by the Lalbhai Group, it is now a well-known firm all over the world. It is one of the top 3 denim manufacturers in the world. It is also known for its shirting, knits and khakhis. It strongly believes that in participating in the development of the society, which helps in its development. It has made valuable contributions to the society. It helped in the establishment of the IIMA, ATIRA, and The Kasturbhai Lalbhai Textile Training Centre in Ahmedabad. It established the Narottambhai Lalbhai Rural Development Fund and The Lalbhai Group Rural Development Fund for the benefit of the weaker sections of the society. It also organizes nutritional programmes and food camps for rural people. It helped in the establishment of SHARDA Trust, i.e. Strategic Help Alliance for Relief to Distressed Areas. This organization works for providing a better quality of life to the people in urban areas. SHARDA works in co-ordination with the Ahmedabad Municipal Corporation to provide basic infrastructure and clean water to the society. It is co-ordinate with a number of hospitals to provide basic medical facilities to the general public. It has developed an environmental policy with a view to protecting the environment from the negative effects of its operations. It strives for optimum utilization of energy, cotton and water. It takes steps to ensure minimum discharge of waste and for the recycling of waste as far as possible. It undertakes measures to ensure minimum pollution. It provides training to its employees on environmental issues and encourages its buyers and suppliers to be environmentally responsible. It takes measures for increasing the greenery cover.

### THE EMERGING MODEL OF CSR IN INDIA

Mapping out these four families of CSR helps provide a context for understanding the emerging model of corporate responsibility in India. Looking across the current practices of leading Indian corporations, a number of core elements emerge.

#### 1. COMMUNITY DEVELOPMENT

Most large companies either have their own foundations or contribute to other initiatives that directly support the community enlistment, notably in health, education, and agriculture.

#### 2. ENVIRONMENTAL MANAGEMENT

Environmental policies and programmes are now standard, and many companies have implemented the ISO 14 001 system throughout their businesses.

#### 3. WORKPLACE

Growing out of long-standing commitments to training and safety is a more recent emphasis on knowledge and employee well-being.

The concept of social responsibility is a fairly recent one in the business world. Awareness about the social responsibility of business organizations is rapidly on the rise and firms are also accepting this concept. The textile industry is no exception. Textile producing and trading firms are also realizing their responsibility towards the society and the environment.

### TEXTILE SECTOR TO BECOME ECO-FRIENDLY

The textile industry will join hands with a global industry group—known as Reducing the Impact of Textiles on Environment (RITE)—to reduce the negative impact during the production of textiles and apparel throughout its supply chain. RITE is led by retail major Marks & Spencer and the University of Leeds. Other members of RITE include Sri Lankan apparel exporter Brandix, retail major Tesco and apparel company Gap Inc. The initiative assumes significance as India is a developing country with an aspiring consumption drive and vast untapped markets, but appears to be largely divorced from emerging sensitivities on sustainable production processes, consumption, retail, policies and environmental hazards. The Apparel Export Promotion Council (AEPC) had signed the charter recently. Under RITE, the Pearl Academy of Fashion (PAF) will set up joint apparel and garment coordination committee for sustainability. PAF is proposing to come out with the best practice manual for sustainability for the fashion value chain.

Gap Inc has offered \$5,000 as the seed fund for the initiative. The need to set up a task force of representatives from the government, NGOs and industry to look at critical issues in the supply chain to address the issues of sustainability. AEPC and PAF plan to take the suggestion further. It may be noted that the textile and clothing sector contributes about 14 per cent of industrial production, 17 per cent of the export earnings and 4 per cent of the GDP, besides providing direct employment to about 35 million people, making it the second largest provider of employment. The industry's size and extensive use of raw materials and chemicals makes it mandatory to adopt technologies that are environmentally sustainable. It is estimated that 1,500 billion liters of water can be saved every year if all apparel producers use latest dyeing and finishing technology.

### INDIAN TEXTILE SECTOR DONS GREEN COLOUR

Indian textile industry now donning a green colour, join hands with a global industry group, led by retail major Marks and Spencer and the University of Leeds called Reducing the Impact of Textiles on Environment (RITE)—which aims at reducing the negative environmental impact from the production of textiles and apparel throughout its supply chain. The initiative assumes significance as India is a developing country with an aspiring consumption drive and vast untapped markets, but appears to be largely divorced from emerging sensitivities on sustainable production processes, consumption, retail, policies and environmental hazards.

Under the programme, PAF will set up joint apparel and garment coordination committee for sustainability. PAF is proposing to come out with the best practice manual for sustainability for the fashion value chain. GAP Inc has offered \$5000 as the seed fund for the initiative, the need to set up a task force of the representatives of the government, NGOs and industry to look at the critical issues in the supply chain to address the issues of sustainability. AEPC and PAF plan to take the suggestion further. It may be noted that the textile and clothing sector contributes about 14% of the industrial production, 17% of the export earnings and 4% of the GDP besides providing direct employment to about 35 million people, making it the second largest provider of employment after agriculture. The industry's size and extensive use of raw materials and chemicals makes it mandatory to adopt technologies that are environmentally sustainable. The sector is a big consumer of natural resources. For example, one of the profligate users and pit requires 2,650 litre water to produce a T-Shirt and 10,000 litre to produce a pair of jeans. It's estimated that 1,500 billion liters of water can be saved every year if all apparel producers use latest dyeing...

### CONCLUSION

CSR is closely linked with the principles of Sustainable Development, which argues that enterprises should make decisions based not only on financial factors such as profits or dividends, but also based on the immediate and long-term social and environmental consequences of their activities. The concept of social responsibility is gaining popularity in today's times. Companies are becoming increasingly aware of their responsibilities towards the various stakeholders associated with them. More and more companies are trying to work in a way so as to protect the interests of the employees, customers, suppliers and other parties and the society at large. The concept of a business firm working only with the motive of earning profit is gradually becoming outdated.

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**A STUDY ON EXCEPTIONAL AND OUTSTANDING HR PRACTICES IN AUTOMOBILE INDUSTRY**

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**ABSTRACT**

Human resource management (HRM) can be viewed as core processes of the project oriented company, affecting the way the organization acquires and uses human resources, and how employees experience the employment relationship. Knowledge about HRM is produced by researchers and theorists who, through publishing their work in books and journals, construct knowledge in particular ways and in so doing frame the way HRM debates take shape in the academic and practitioner literatures. In most of the extant literature HRM is framed primarily in terms of large, stable organizations, while other organizational types, such as, those relying on projects as the principle form of work design, are marginalized in discussions about what HRM is and how it should be practiced. The aim of this paper is to provide an overview of past research on HRM in the context of projects, published in the project management, general management, and HRM literatures. We develop a model of what we see as the critical HRM aspects of project-oriented organizing, based on prior research and use it to structure the review. Finally we summarize what we see as the major shortcomings of research in the field of HRM in the project-oriented company and outline a research agenda to address outstanding areas of research on this topic.

**KEYWORDS**

HRM, Automobile Industry, Employees.

**INTRODUCTION**

The human resources of an organization consist of all people who perform its activities. Human resource management (HRM) is concerned with the personnel policies and managerial practices and systems that influence the workforce. In broader terms, all decisions that affect the workforce of the organization concern the HRM function. The activities involved in HRM function are pervasive throughout the organization. Major HRM responsibilities include work design and job analysis, training and development, recruiting, compensation, team-building, performance management and appraisal, worker health and safety issues, as well as identifying or developing valid methods for selecting staff. HRM department provides the tools, data and processes that are used by line managers in their human resource management component of their job.

The role of Human Resource Management in organization has been evolving dramatically in recent times. The days of personnel management performing clerical duties such as record keeping paper pushing and life maintenance are over. Human Resource is increasingly receiving attention as a critical strategic partner, assuming stunningly different, for reaching transformational roles and responsibilities.

**HR PRACTICES**

The success of any business depends as much on appropriate, effective, well-communicated, HR and business practices as it depends on meeting the requirements of mandated laws and regulations. In fact, good planning and the development of effective practices make regulatory compliance much easier. HR practices helps in increasing the productivity and quality, and to gain the competitive advantage of a workforce strategically aligned with the organization's goals and objectives.

**OBJECTIVE OF HR PRACTICES**

As The Transparent HR practices can reduce attrition, because-  
 Transparent HR practices ensure continuous business growth in every organization.

- It gives the suitable working environment to the employees.
- The success of company motivates the employees of organization to continue relationship with it. As all the employees Perks chart has been mentioned according to their designation in the HR practices, it helps the employees to know what their perks charts are. So it creates a transparency.

**ROLES AND RESPONSIBILITIES OF HR PRACTICES:**

- Initiates and facilitates the strategic process of crafting the organization's mission-vision and values;
- Utilizes a planning process to arrive at clear performance indicators and targets aligned to business strategies;
- Continuously acquires a comprehensive and up-to-date understanding of the business and its dynamics and environment, as well as identifies the implications of (HRM or) human resource actions as a result of these;
- Exercises foresight, courage, and competence for longer-term (organizational) change;
- Translates business strategies into priorities and programs for human resources (employees), thereby aligning them;
- Communicates business plan impact on human resources practices (HRM), and gets others to support the plan and activities;

**HUMAN RESOURCE PRACTICES**

Some of the key performance indicators for Human Resources include but are not limited to the following.

- Employees' clarity on HR policies
- Employees' clarity on roles, responsibilities and expectations
- Development of qualitative staff
- Number of HR issues arising for which there are no clear policies and guidelines

- Competitiveness of compensation structure relative to industry benchmark
- Usefulness and accuracy of compensation survey
- Lead time to respond to staff welfare issues
- Employees' assessment of promotion criteria and process (clarity, fairness)
- Measurement of HR policy violation
- Average time required to fill vacancies
- Proportion of training programs resulting in productivity improvement
- Staff attrition rate
- Understanding / Clarity of the Organizational philosophy
- Outline Internal capabilities and identify gaps on skills-competencies-behavioral aspects
- Prepare HR strategic Objectives and bring in clarity as to how the HR strategy supports the organizational strategy
- Develop KPI's for each of the strategic objectives.
- Track and measure performance

### IMPORTANCE OF HUMAN RESOURCE PRACTICES

The article, "The Impact of Human Resource Management Practices on Turnover, Productivity and Corporate Financial Performance" states, "An increasing body of work contains the argument that the use of High Performance Work Practices, including comprehensive employee recruitment and selection procedures, incentive compensation and performance management systems, and extensive employee involvement and training, can improve the knowledge, skills and abilities of a firm's current and potential employees, increase their motivation, reduce shirking and enhance retention of quality employees.

### HUMAN RESOURCES BEST PRACTICES

The best practices in the management of human resources are the ones which optimize a workforce so that it can not only get work done, but also ensure a greater level of efficiency, timeliness and quality as it accomplishes increases productivity overall.

Hence the job of the best practices human resources firm is to make sure that these benefits and pay scales meet the company's budget while remaining attractive and competitive enough to pull in the very best talent possible. We should know that these figures put the company in a good light while also presenting themselves as engaging and competitive for company's recruitment efforts.

- Safe, Healthy And Happy Workplace
- Open Book Management Style
- Performance Linked Bonuses
- 360-Degree Performance Management Feedback System
- Fair Evaluation System For Employees
- Knowledge Sharing
- Highlight Performers
- Open House Discussions And Feedback Mechanisms
- Reward Ceremonies
- Delight Employees With The Unexpected

### FUNCTIONS OF HR PRACTICES

- Recruitment, selection, and on boarding (resourcing)
- Organizational design and development
- Business transformation and change management
- Performance, conduct and behavior management
- Industrial and employee relations
- Human resources (workforce) analysis and workforce personnel data management
- Compensation, rewards, and benefits management
- Training and development (learning management)
- Understanding and relating to employees as individuals, thus identifying individual needs and career goals.
- Developing positive interactions between workers, to ensure collated and constructive enterprise productivity and development of a uniform organizational culture.
- Identify areas that suffer lack of knowledge and insufficient training, and accordingly provide remedial measures in the form of workshops and seminars.
- Generate a rostrum for all employees to express their goals and provide the necessary resources to accomplish professional and personal agendas, essentially in that order.

### MAJOR TREND AFFECTING HR PRACTICES

The following trends have an effect on human resource management function and department. The importance of HRM increases due to some of them and the practices of HRM are affected to some extent due to some of them.

- Increased globalization of the economy.
- Technological changes and environmental changes.
- The need to be flexible in response to business changes.
- Increase in litigation related to HRM.
- Changing characteristics of the workforce.

### INNOVATIVE HR PRACTICES

Innovative HR practices build competencies and capabilities for superior and winning performances today and simultaneously create long term fertility for innovation of business ideas and strategies for future. Employees who go the extra mile by performing spontaneous behaviors that go beyond their role prescriptions are especially valued by the management.

- (i) Hr Strategy
- (ii) Training and Development
- (iii) Talent acquisition
- (iv) Talent Management
- (v) Employee Relation & Communication

(vi) Compliance

**OBJECTIVES OF THE STUDY**

- To find out the opinion of existing HR Practices and the Innovative HR Practices.
- To analysis the current scenario of HR Practices.
- To implement the new suggestion for improving organization.

**NEED AND SCOPE OF THE STUDY**

Organizations should regularly take steps in HR practices to make efficient smooth moving of organization.

- It helps to delight the customers.
- Deliver high quality and excellence in all actions.
- It helps to develop the organization.
- The quality of employee's life style may develop.
- Make people to think this is the right source.
- Choose right person to the right job.
- Resolve the problems.
- The innovative HR practices in the organization make different strategies among other organizations.

**REVIEW OF LITERATURE**

**Huselid (1995)** conduct study about eleven HRM practices. In this study which are personnel selection, performance appraisal, incentive compensation, job design, grievance procedures, information sharing, attitude assessment, labor management participation, recruitment efforts, employee training and promotion criteria. This study examines the relationship between three HR practices i.e. compensation, promotion and performance evaluation and perceived employee performance.

**Teseema & Soeters (2006)** have studied eight HR practices and their relationship with perceived employee performance. These eight practices include recruitment and selection practices, placement practices, training practices, compensation practices, employee performance evaluation practices, promotion practices, grievance procedure and pension or social security. The study concludes that HR practices are very important to the organization and it is necessary to maintain the organization properly.

**Wright and McMahan (1992: 298)** define it as: "the planned HR deployments and activities intended to enable to achieve its goals". HR deployments reflect the central assumptions behind the (positive) conceptualization of what HRM is and does: namely, that it responds accurately and effectively to the organization's environment and complements other organizational systems and contingencies.

**Katou and Budhwar (2006)** in their study of 178 Greek manufacturing firms found support with the universalistic model and reported that HRM policies of recruitment, training, promotion, incentives, benefits, involvement and health and safety are positively related to organizational performance.

**Huselid (1995)** reported that HR practices can influence firm performance through provision of organizational structures that encourage participation among employees and allow them to improve and redesign how their jobs are performed.

**Green, Wu, Whitten and Medlin (2006)** reported that organizations that vertically aligned and horizontally integrated HR function and practices performed better and produced more committed and satisfied HR function employees who exhibited improved individual and organizational performance.

**RESEARCH METHODOLOGY**

Research methodology describes how the research study was under taken. This includes the specifications of research design, source of data method of primary data collection, the sampling method employed etc.

**RESEARCH DESIGN**

Fundamental to the success of any formal research project is sound research design. A research design in purely and simply the frame work or plan for a study that guides the collection and analysis of the data.

**DESCRIPTIVE RESEARCH DESIGN**

It includes surveys and fact-finding enquires of different kinds. It is one that simply describes something such as demographic characteristics of respondents who are working in the organization.

**SAMPLING DESIGN**

Only a few units of population under study are considered for analysis and this is called sampling data. It is collected from 150 respondents in the total size of 480. The technique of sampling used in this study is random sampling.

**METHOD OF DATA COLLECTION****(i) Primary Data**

Primary data are collected through the well-structured questionnaire. Administering questionnaire to the respondents directly and collecting the information immediately is called primary data and the researcher has used primary data for this study.

**(ii) Secondary Data:**

The secondary data used in this research is journals, magazines, and internet.

**TOOLS FOR ANALYSIS****1. Simple percentage analysis:**

Percentage refers to a special kind of ratio. Percentage is used in making comparison between two or more series of data.

Percentages are used to desirable relationship; since the percentage reduces everything to a common base; it allows a meaningful Comparison / Interpretation.

**2. Chi-Square Analysis:**

Chi-square test is an important test among the several test of significance. It is pronounced as Ki-square, it is a statistical measures used in context of sampling analysis for comparing a variance to a theoretical value.

**LIMITATIONS OF THE STUDY**

- Some respondents were hesitant to answer the questions.
- The respondents took a long time to fill up the questionnaire.
- The study was limited within the company.
- Results are purely based on primary information.

**ANALYSIS AND INTERPRETATION**

**PERCENTAGE ANALYSIS**

**TABLE NO – 1: THE TABLE SHOWING CLASSIFICATION OF RESPONDENTS BASED ON GENDER**

Sex	No. of Respondents	Percentage
Male	141	94.0
Female	9	6.0
<b>Total</b>	<b>150.0</b>	<b>100.0</b>

**INTERPRETATION**

The above table shows that 9.0 % of the respondents are Female and 141.0 % of the respondents

**TABLE NO – 2: THE TABLE SHOWING CLASSIFICATION OF RESPONDENTS BASED ON AGE**

Age ( years)	No. of Respondents	Percentage
25 – 30 years	28	18.7
30 – 35 years	37	24.7
35 – 40 years	52	34.7
above 40 years	33	22.0
<b>Total</b>	<b>150.0</b>	<b>100.0</b>

**INTERPRETATION**

The above table shows that 18.7% of the respondents are between 25 to 30 years of age, 24.7% of the respondents are 30 to 35 years of age, 34.7 % of the respondents are in the age group of 35-40 years, and the rest 22.0 % of the respondents are of Above 40 years of age.

**TABLE NO – 3: THE TABLE SHOWING SATISFACTION LEVEL OF ALL THE PROCESS IN ORGANIZATION**

S.NO	Parameter	No. of Respondents	Percentage
1	Highly Satisfied	67	44.7
2	Satisfied	83	55.3
3	Highly Dissatisfied	-	-
4	Dissatisfied	-	-
	<b>Total</b>	<b>150</b>	<b>100.0</b>

**INTERPRETATION**

The above table shows that 55.3% of respondents are satisfied with the ROOTS CARE process, 44.7% of respondents are Highly Satisfied with the ROOTS CARE process

**CHI-SQUARE ANALYSIS**

**Table: 4**

**Null hypothesis (h0):**

There is a significant relationship between Gender and over all process.

**Alternative hypothesis (h1):**

There is no significant relationship between Gender and over all process of the ROOTS CARE System.

**TABLE: 4: CHI-SQUARE ANALYSIS BETWEEN GENDER AND OVER ALL PROCESS**

		State the satisfaction level of all the process in ROOTS CARE?		Total
		HIGHLY SATISFIED	SATISFIED	
GENDER	MALE	65	76	141
	FEMALE	2	7	9
Total		67	83	150

	Value	Df
Pearson Chi-Square	1.951	1
Likelihood Ratio	2.091	1

**INFERENCE**

At 5% level of significance, the tabulated value is 3.84; calculated value 1.95 is less than the table value. Hence there is a significant relationship between Gender and over all process of the ROOTS CARE System.

**Table 5:**

**Null hypothesis (h0):**

There is a significant relationship between Gender and Satisfaction level of the Long Service Award.

**Alternative hypothesis (h1):**

There is no significant relationship between Gender and Satisfaction level of the Long Service Award.

**TABLE 5: CHI-SQUARE ANALYSIS BETWEEN GENDER AND SATISFACTION LEVEL OF LONG SERVICE AWARD**

		Whether the long service award is motivated and satisfied by you?		Total
		HIGHLY SATISFIED	SATISFIED	
GENDER	MALE	99	42	141
	FEMALE	9	9	9
Total		108	42	150

	Value	Df
Pearson Chi-Square	3.72	1
Likelihood Ratio	6.13	1

**INFERENCE**

At 5% level of significance, the tabulated value is 3.84; calculated value 3.72 is less than the table value. Hence there is a significant relationship between Gender and Satisfaction level of the Long Service Award.

Table-6

**NULL HYPOTHESIS (H0):**

There is a significant relationship between Gender and Satisfaction level of the overall HR practices.

**ALTERNATIVE HYPOTHESIS (H1):**

There is no significant relationship between Gender and Satisfaction level of the overall HR practices.

**TABLE NO – 6: CHI-SQUARE ANALYSIS BETWEEN GENDER AND OVERALL HR PRACTICES.**

		The overall HR practices in your organization are satisfied to you?		Total
		HIGHLY SATISFIED	SATISFIED	
GENDER	MALE	123	18	141
	FEMALE	9		9
Total		132	18	150

	Value	Df
Pearson Chi-Square	1.306	1
Likelihood Ratio	2.378	1

**INFERENCE**

At 5% level of significance, the tabulated value is 3.84; calculated value 1.306 is less than the table value.

Hence there is a significant relationship between Gender and Satisfaction level of the overall HR practices.

**FINDINGS**

1. The majority 56.7% of respondents are agreeing with induction procedures which are conducted in the organization.
2. The majority 53.3% of respondents are experienced the management development programs are excellent to them.
3. The majority 52.7% of respondents are satisfied with the health checkup programs which are conducted by the organization.
4. The majority 80.7% of respondents are strongly agreed with incentives which are given by the organization.
5. The majority 67.3% of respondents are agreeing with training programs which is conducted by the organization.
6. The majority 76.7% of respondents are satisfied with the welfare facilities which are provided by the organization.
7. The majority 72.0% of respondents are highly satisfied with the long service award.

**SUGGESTIONS**

- The minimum peoples only get highly satisfied with overall process of ROOTS CARE system, so ROOTS CARE system should implement and offer more innovative development programs according to their levels.
- The existing Positive Mental Attitude programs are not satisfied by all employees, so the development programs should be more interactive and lively and the employee's confidence level can improve.
- Employees need improvement in all the development programs, so it should be technically improve to develop their skills, knowledge and especially in their job.
- All the HR practices are satisfied by all the employees. If it is improved technically and effectively related to their job, the organization will get high profit in terms of money.
- The proper training will help to improving the performance of employees. So that they will get satisfied in their job and the organization also will get some benefits.
- Conduct awareness programs inside and outside of the campus with the help of ROOTS CARE system, people will think good perception about the organization.

**CONCLUSION**

The HR practices are very important to all the organization. All the process of the organization is based on HR department only. Practices will make perfect in anything, like that HR practices will make the organization perfect. From the study it can be concluded that the existing HR practices are very important to the organization, and also all the employees are always welcoming the innovative and technical improvement in the organization. They want to upgrade their level in skills and knowledge. The innovative HR practices are making the employees to be confident and making the organization perfect and helping to achieve the goal of the organization. The Innovative HR practices are very essential to the organization growth and success.

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## A CONCEPTUAL FRAMEWORK FOR ORGANIZATIONAL COMMITMENT FACTORS

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### ABSTRACT

*Organizational commitment is the degree to which the employee feels devoted to their organization. This article highlights the importance and meaning of organizational commitment for effective performance of an organization. As we mostly base our concepts on our own perceptions, the meaning of organizational commitment, and its importance, differs from one person to another, especially when we originate from different religious and cultural backgrounds. The authors explain their concept of organizational commitment, and the Framework for various factors of organizational commitment which play a vital role to build organizational effectiveness. With the high costs involved in employee selection and recruitment, companies are increasingly concerned with retaining employees. Generating employee commitment is an important consideration for large and small organizations.*

### KEYWORDS

Organizational commitment, Role clarity, Job Satisfaction, Turnover, Intention to leave.

### INTRODUCTION

Organizational commitment is the total capacity to act in ways that meet the organization's goals and interests. Organizational researchers and social psychologists view commitment quite differently. In recent years, researchers have argued that the changing nature of employment relationships has heightened the importance of understanding the dynamics of Commitment in organizations (Hislop 2003; Dick, Becker and Mayer 2006). For example, scholars have increasingly suggested that commitment is a necessary variable that drives individual action (Cooper-Hakim and Viswesvaran 2005; Herrbach 2006). It is also commonly theorized that the level of commitment is a major determinant of organizational level outcomes such as organisational citizenship behavior (Coyle-Shapiro and Kessler 2000); performance (Meyer, Pannonen, Gellatly, Goffin and Jackson 1989; DeCotiis and Summers 1987); controllable absenteeism (Meyer and Allen 1997); and psychological contract (Guest and Conway 1997). Organizational researchers study **attitudinal commitment**, focusing on how employees identify with the goals and values of the organization. This is commitment viewed primarily from the standpoint of the organization. Social psychologists study **behavioral commitment**, focusing on how a person's behavior serves to bind him to the organization. Employees are not only committed to the organization to a greater or lesser degree, but as individuals with multiple roles also have other commitments. These include such obvious connections as those of family or community, but they also embrace membership in occupational communities or in other association. This article highlights the importance and meaning of organizational commitment for effective performance of an organization.. As we mostly base our concepts on our own perceptions, the meaning of organizational commitment, and its importance, differs from one person to another, especially when we originate from different religious and cultural backgrounds. The authors explain their concept of organizational commitment, and the Framework for various factors of organizational commitment which play a vital role to build organizational effectiveness. With the high costs involved in employee selection and recruitment, companies are increasingly concerned with retaining employees. Generating employee commitment is an important consideration for large and small organizations.

### OBJECTIVES

- To study the meaning, types and consequences of organizational commitment
- To build new framework for organizational commitment factors
- To analyze the factors influencing organizational commitment

### ORGANIZATIONAL COMMITMENT

**Organizational commitment** in the fields of Organizational Behavior and Industrial/Organizational Psychology is, in a general sense, the employee's psychological attachment to the organization. It can be contrasted with other work-related attitudes, such as job satisfaction, defined as an employee's feelings about their job, and organizational identification, defined as the degree to which an employee experiences a 'sense of oneness' with their organization.

**Organizational Commitment** as defined by the BNET, Business Dictionary, available at <http://dictionary.bnet.com/definition/organizational+commitment.html> is:

- The commitment of an organization to given goals and objectives, as demonstrated through its stated goals and policies, and its actions and allocation of resources
- The degree of employee commitment within an organizational workforce

Mowday, Steers and Porter (1979), defined commitment as 'the relative strength of an individual's identification with, and involvement in a particular organisation' Organizational commitment involves both organizational and supervisory commitment and is directed by organization attributes such as values and organizational behaviors (Morrow, 1993).

Supervisory commitment is defined as the strength of identification with the supervisor and the internalization of the supervisor's values. Identification occurs when the subordinate admires certain attributes of the supervisor, such as attitudes, behaviors, and accomplishments.

Internalization occurs when the subordinate adopts the attitudes and behaviors of the supervisor because the supervisor's attitudes and behaviors are congruent with the subordinate's value systems (Becker, 1992; Gregersen & Black, 1993).

**Herscovitch and Meyer** define (2001) organizational commitment as 'the degree to which an employee identifies with the goals and values of the organization and is willing to exert effort to help it succeed'. Loyalty is argued to be an important intervening variable between the structural conditions of work, and the values, and expectations, of employees, and their decision to stay, or leave.

## REVIEWS RELATED TO FRAMEWORK

**Gormley DK, Kennerly S (2011)** The study was to examine how organizational commitment is influenced by organizational climate and nurse faculty work role in departments/colleges of nursing. Descriptive analyses were used to summarize institutional and nursing program data. ANOVA and t-tests were performed to determine differences between faculty information and study variables. A significant difference was found between teaching work role, and role ambiguity, role conflict and organizational climate. The study's findings offer interesting insights into the dynamic relationships between organizational commitment and climate, work role balance, role ambiguity, and role conflict.

**M. Turan Cuhandar (2008)** The main object of this paper is to analyse the sectoral perception and difference of role conflict and role ambiguity with job satisfaction and organizational commitment. This study was conducted with employees from both public and private sector firms in the Mediterranean Region of Turkey. The data gathered from 219 employees was analyzed to test the three hypotheses of the study. Findings indicated that role conflict and role ambiguity, job satisfaction and organizational commitment are different in public and private sector:

**Maria Vakola, Ioannis Nikolaou (2005)** The current study explores the linkage between employees' attitudes towards organizational change and two of the most significant constructs in organizational behavior; occupational stress and organizational commitment. A total of 292 participants completed ASSET, a new organizational Screening Tool, which, amongst other things, measures workplace stress organizational commitment and a measure assessing attitudes towards organizational change. The most significant impact on attitudes to change was coming from bad work relationships emphasizing the importance of that occupational stressor on employees' attitudes towards change. The results did not support the role of organizational commitment as a moderator in the relationship between occupational stress and attitudes to change.

**Christian Vandenberghe and Michel Tremblay (2008)** This paper reports the results of a two-sample study—a sample of medical reps from pharmaceutical companies (N = 232) and a sample of respondents from multiple organizations (N = 221)—of the relationships between pay satisfaction, organizational commitment, and turnover intentions. Pay satisfaction is also significantly related to normative commitment but the latter has no influence on the outcome. Finally, in the sample of medical reps, pay satisfaction significantly reduces commitment based on lack of employment alternatives, a finding that is interpreted in light of the characteristics of pay systems in pharmaceutical companies. Future directions on compensation satisfaction and commitment research are discussed.

**Eric G. Lambert, Nancy L. Hogan, and Shanhe Jiang (2008)** Correctional staff are the backbone of any correctional organization, and building organizational commitment among employees is critical for an effective organization. Although there is a small but growing body of literature on the antecedents and consequences of organizational commitment, there has been little discussion on the various types and levels of commitment and whether results differ depending on the form of commitment being measured. This study reviewed the three major types (i.e., affective, moral, and continuance) and two levels (i.e., agency and institutional) of organizational commitment.

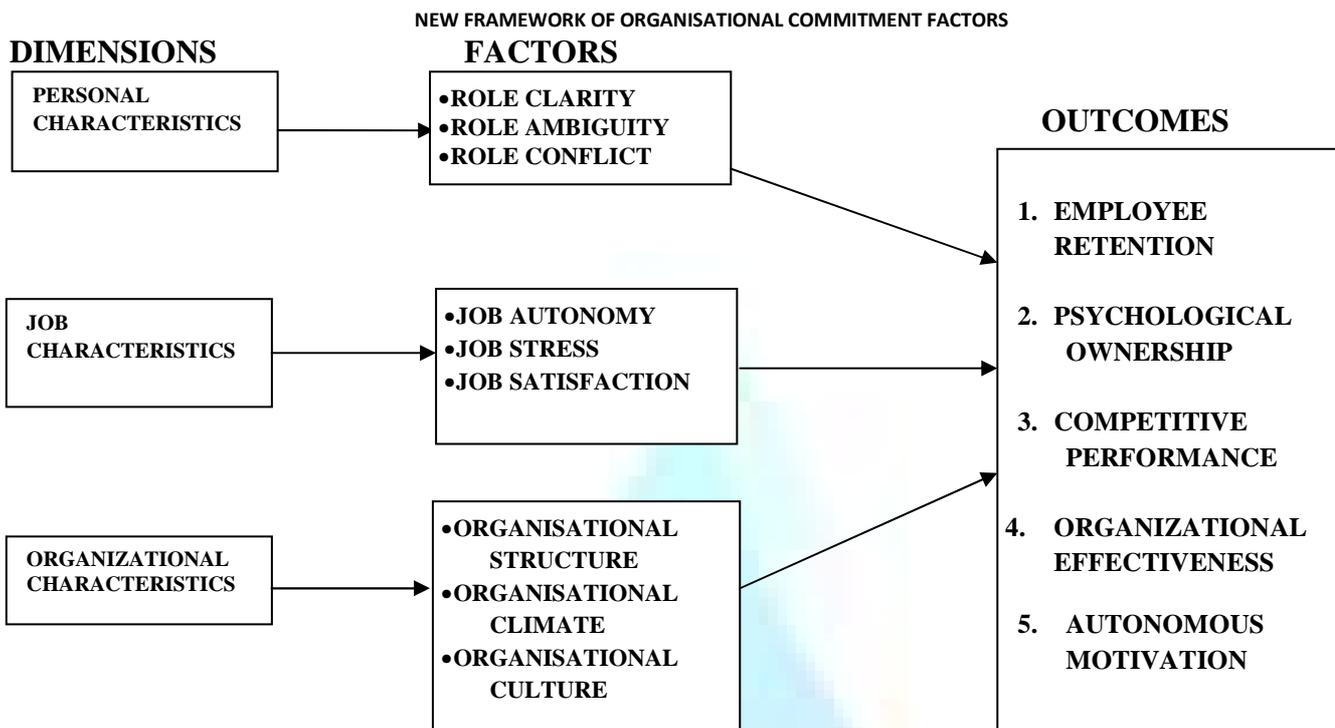
**Ki-Joon Back, Choong-Ki Lee, and JeAnna Abbott (2010)** This study examined the relationship between the following key variables: internal service quality, self-efficacy, job satisfaction, self-esteem, and organizational commitment. The study sought to identify ways to improve casino employees' job satisfaction, further enhance employees' organizational commitment, and possibly decrease job turnover intention.

**Donald P. Moynihan and Sanjay K. Pandey (2007)** This article draws on a sample of state government health and human service managers to develop and test a model of work motivation. The authors examine the effect of individual attributes, job characteristics, and organizational variables on three aspects of work motivation: job satisfaction, organizational commitment, and job involvement. A number of variables are important for work motivation, including public service motivation, advancement opportunities, role clarity, job routineness, and group culture.

## TYPES OF ORGANIZATIONAL COMMITMENT



As the above figure shows, Meyer and Allen (1997) identified and represented three forms of commitment: **affective, continuance, and normative**. **Affective** commitment is an individual's emotional attachment with (i.e. identification with and involvement in), the organization. **Continuance** commitment refers to the individual's recognition of the benefits of continued organizational membership versus the perceived cost of leaving the organization. Finally, **normative** commitment refers to the employee's feeling of obligation to stay in the organization. All three forms of commitment affect not only employees' willingness to remain with an organization, but their work related behavior as well.



Organizational commitment framework provides insight to view commitment as three dimensions, namely personal characteristics, job characteristics and organizational characteristics. The factors like role clarity, role ambiguity and role conflict are included in the personal characteristics.

Task identity, job stress and job satisfaction are taken in job characteristics whereas organizational characteristics contains organizational structure, Organizational climate and organizational culture. This framework will provide new insight to view the organizational commitment by analyzing the reviews related to the factors.

According to **Charles H. Schwepker, Jr (2001)** salespeople's perceptions of a positive ethical climate are positively associated with their job satisfaction, organizational commitment and turnover intention of Salesforce

**Michael P. O'driscoll, Jon L. Pierce, and Ann-Marie Coghlan** was reasoned that low levels of work environment structure permit employees to exercise more personal control, have greater knowledge (of their job and organization), and invest themselves more extensively into their work. Hence, less structured work environments are more conducive to the development of feelings of psychological ownership for the job and organization than are more highly structured work environments that allow less personal control. Results from this investigation suggest that psychological ownership (especially feelings of ownership for the organization) mediates the relationship of work environment structure with employee citizenship behaviors and organizational commitment.

**Eric Lambert and Nancy Hogan** reveals the results through multivariate ordinary least squares regression equations generally supported the proposed path model, and indicated age, job satisfaction, and organizational commitment directly influence turnover intent, whereas gender, job satisfaction, role conflict, role ambiguity, role overload, input into decision making, and organizational fairness indirectly affected employees' decisions to leave the job.

**Brian G. Whitaker, Jason J. Dahling, and Paul Levy** develops a model that demonstrates that subordinates who perceive a supportive feedback environment display increased feedback seeking, higher role clarity, and higher performance ratings. The results show that there is a positive relationship that exists between role clarity, role overload and organizational commitment.

**Donald P. Moynihan and Sanjay K. Pandey** examined the effect of individual attributes, job characteristics, and organizational variables on three aspects of work motivation: job satisfaction, organizational commitment, and job involvement and reveals that there is a positive relationship between motivation and commitment.

**Helena M. Addae and K. Praveen Parboteeah** also predicted that job satisfaction would mediate the relationship between organizational commitment and turnover intentions. Finally, it was hypothesized that job alternatives will moderate the relationship between job satisfaction and intention to quit.

**According to Baek-Kyoo Joo and Taejo Lim** Employees exhibited the highest organizational commitment when they perceived higher learning culture and higher job complexity.

**Hester Hulpia, Geert Devos, and Hilde Van Keer** The implications of the findings are that to promote teachers' organizational commitment teachers should feel supported by their leadership team and that this leadership team should be characterized by group cohesion, role clarity, and goal orientedness

**Robert C. Dailey** findings indicated that job satisfaction, work autonomy, job involvement and feedback from the work itself were strong predictors of organizational commitment

**The researchers Nancy L. Hogan, Eric G. Lambert, Morris Jenkins, and Suzanne Wambold** analyzes the relationship and the results based on ordinary least squares regression indicates, role ambiguity, role conflict, work on family conflict and organizational commitment had statistically significant effects.

As per the researchers view role clarity is positively related to organizational commitment and role ambiguity and role conflict is negatively related to organizational commitment. Job autonomy and job satisfaction are positively correlated to organizational commitment whereas job stress is negatively correlated to organizational commitment

Proper organizational structure and organizational culture brings organizational commitment and effective organizational climate helps to attain organizational effectiveness.

#### OUTCOMES OF NEW ORGANIZATIONAL COMMITMENT FRAMEWORK

- Managers often become interested in commitment because they want to reduce voluntary turnover. Thus, when managers spot declining commitment, they should also expect subsequent voluntary turnover.
- Organizational commitment helps in achieving a high performance workplace requires the integration of work, people, technology, and information with an enterprise's strategy and culture. This integrated approach will help focus the effective use of all available resources on the prime task of achieving organizational objective and will have an impact on the performance of individuals, work teams and the total organization.

- Organizational commitment received attention as work-related attitudes and subsequent predictors of work-related outcomes enhances organizational effectiveness, psychological ownership for the organization and performance, lower role conflict and role ambiguity and an employee's readiness for change
- Determining the quality of work life (QWL) of employees is an important consideration for employers interested in improving employees' job satisfaction and commitment. Seven QWL variables were examined namely growth and development, participation, physical environment, supervision, pay and benefits and social relevance were examined to determine their relationship with organizational commitment.
- Commitment is one of the original 4-Cs (Commitment, Congruence, Competence, Cost effectiveness) in the influential Harvard model of HRM organizational commitment is regarded as an immediate and, perhaps, the most critical outcome of human resource strategy.
- Organizational commitment is largely influenced by organizational policies/practices and organization's seriousness towards its employees which is the key factor in achieving competitive performance.
- Job satisfaction is a result of employee's perception of how well their job provides those things that are viewed as important. Job satisfaction is so important that its absence often leads to lethargy and reduced organizational commitment
- Commitment leads to increased autonomous motivation, which will lead to the setting of more difficult goals, greater effort, and higher performance. motivation is a basis for organizational commitment; it is the nature of the motivation to work that will lead to the development of certain types of commitment to an organization

## CONCLUSION

It is very important to study whether employees are satisfied, because it is intuitively believed that workers who are more satisfied will likely exhibit more positive feelings, thoughts, and actions toward their job. Similarly, studying about whether employees are committed to the organization that they work for is important. By definition, organizational commitment refers to "an attitude that reflects the strength of the linkage between an employee and an organization" The authors explained the concept of organizational commitment, and the Framework for various factors of organizational commitment which play a vital role to build organizational effectiveness. Organizational Commitment reduces the high costs involved in employee selection and recruitment; companies are increasingly concerned with retaining employees. Generating employee commitment is an important consideration for large and small organizations. Organizational commitment outcomes are also analyzed.

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## WOMEN'S SUSTAINABILITY THROUGH SHGs-BANK LINKAGE PROGRAMME - A STUDY OF CHITTOOR DISTRICT IN ANDHRA PRADESH

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### ABSTRACT

*In order to enhance the economic and social sustainability of women, and ultimately economic development of the nation, the importance of utilization of female labour force has now been well recognized. Every possible effort is made to strengthen the status of women particularly those in rural areas through the promotion of self-help groups among women and through their collective activities, their economic, and social sustainability is sought to be achieved. This research paper is completely based upon the primary data collected from the DWCRA/SHG Members in Chittoor District of Andhra Pradesh. It focuses on the motivation of the SHG members by different resource persons in various revenue divisions of Chittoor District to join the SHGs, savings mobilized by the DWCRA/SHG women in different revenue divisions of Chittoor district along with the average levels of savings, internal loans transacted from the year when the group activity was begun by the respective SHG up to December 2009, SHG-Bank linkage programme in the study area, the utilization of SHG-bank linkage loans by the members in different revenue divisions of Chittoor district and the value of assets of different types such as family comforts, agricultural assets including landed property, livestock assets and financial assets such as LIC policies, bonds etc., possessed by the DWCRA/SHG member households before they became the members of the DWCRA/SHGs.*

### KEYWORDS

Women's Sustainability, Micro-credit - Self-Help Group (SHG) members - Bank Linkage Programme, Chittoor district of Andhra Pradesh.

### PREAMBLE

A significant development in recent years has been the mushrooming of community-based organizations and initiatives at the local level for women. Reports indicate that self-help programmes, often in the form of savings and credit or micro-credit schemes, have succeeded in changing the lives of poor women, enhancing their incomes, alleviating their poverty and generating positive externalities such as increased self-esteem. Before the 1990s, credit schemes for rural women were almost negligible. The concept of women's credit was born when women-oriented studies insistently drew attention to the discrimination against and the women struggle of women to obtain access to credit. However, there is a perceptible gap in financing the genuine credit needs of poor women especially women in the rural sector.

There are certain misconceptions about the poor that they expect loans at subsidized rates of interest on soft terms, that they lack education, skills, capacity to save, credit-worthiness and therefore are not bankable. Nevertheless, the experiences of several self-help groups (SHGs) reveal that the rural poor are actually efficient managers of credit and finance. They want that timely and adequate credit is made available to them to undertake any economic activity rather than credit subsidy. The Government measures have attempted to help the poor by implementing different poverty alleviation programmes but with little success, since most of them are target-based involving lengthy procedures for loan disbursements, high transaction costs, and lack of supervision and monitoring. Banks often suffer from poor repayment result in a high level of non-performing assets (NPAs).

Since the credit requirements of the rural poor cannot be met by adopting the project lending approach as in the case of the organized sector, there has emerged the need for an informal credit supply through self-help groups (SHGs). The rural poor with assistance from the NGOs have demonstrated their potential for self-help to secure economic, social and financial strength. Various case studies show that there is a positive correlation between credit availability and women's sustainability.

### SELF-HELP GROUP (SHG)

According to the Reserve Bank of India, a Self-Help Group (SHG) is a registered or unregistered group of micro-entrepreneurs having homogenous social and economic background, voluntarily coming together to save small amounts regularly, mutually agree to contribute to a common fund and to meet their

emergency needs on mutual help basis.<sup>1</sup> The group members use collective wisdom and peer pressure to ensure proper end-use of credit and timely repayment thereof. In fact, peer pressure has been recognized as an effective substitute for collaterals.

According to the NGOs, a Self-Help Group (SHG) is a small voluntary association of poor people, preferably from the same socio-economic background. They come together for the purpose of solving their common problems through self-help and mutual help. The SHG promotes small savings among its members. The savings are kept with a bank. This common fund is in the name of the SHG. Usually, the number of members in an SHG does not exceed twenty.<sup>2</sup>

### ORIGIN AND CONCEPT OF SHGs

The origin of SHGs traced to the Grameen Bank of Bangladesh, which was founded by Mohammed Yunus. They were formed and started in Bangladesh in 1975. In India the National Agriculture Bank for Rural Development (NABARD) was initiated in 1986-87. But the real effort for organizing the SHGs was made after 1991-92 when the SHGs formed linkages with banks.<sup>3</sup> An SHG is a small economically homogeneous affinity group of the rural poor voluntarily coming together to save small amounts regularly, which are deposited in a common fund to meet members emergency needs and to provide collateral free loans decided by the group.<sup>4</sup> The SHGs have been recognized as a useful tool to help the poor and as an alternative mechanism to meet the urgent credit needs of the poor through thrift.<sup>5</sup> They serve as a medium to develop the saving habit among women.<sup>6</sup> They enhance the equality of status of women as participants, decision-makers and beneficiaries in the democratic, economic, social and cultural spheres of life.<sup>7</sup> The basic principles of the SHGs are group approach, mutual trust, organization of small and manageable groups, group cohesiveness, spirit of thrift, demand-based lending, collateral free, women-friendly loan, peer group pressure in repayment, skill training, capacity-building and empowerment.<sup>8</sup>

### WORKING OF THE SHGs

The SHGs work democratically. The upper limit of members in a group is restricted to 20. One of them is selected as the 'animator' and two others are selected as representatives. The animator is selected for a period of two years. The group members meet every week, to discuss the group savings, rotation of sangha funds, bank loan, repayment of loan, social and community action programmes.

### FUNCTIONS OF THE SHGs

The following are the functions of the SHGs.

1. Creating a common fund by the members through their regular savings;
2. Adopting a flexible working system to pool resources in a democratic way;
3. Meeting periodically (weekly once), and decision-making collectively by the group;
4. Lending small and reasonable amounts, so that it is easy to repay in time.
5. Charging affordable interest, varying it from group to group and from loan to loan. However it is a little higher than the banks' but much lower than that of private money-lenders.

From the previous studies related to the SHGs, it is clear that the SHGs are an effective means to promote both rural savings and gainful employment, and to reduce rural poverty considerably. The women members of the SHGs become economically independent and their contribution to household income are also increased.

### OBJECTIVES OF SELF-HELP GROUP

The SHGs comprise very poor people who do not have access to formal financial institutions. They act as a forum providing space for the members to exchange ideas and opinions and support each other. They also enable them to learn to cooperate with each other and work in a group environment. The SHGs provide a savings mechanism, which suits the needs of the members. They also provide a cost-effective delivery mechanism for small credit to their members. The SHGs significantly contribute to the sustainability of poor women.<sup>9</sup>

### HELP IN THE FORMATION OF SELF-HELP GROUP

The SHGs are at present promoted by governments, development banks, voluntary agencies and the NGOs, with focus on social and economic issues, mainly thrift and credit programmes. They are also taking up issues relating to rural enterprises, non-traditional enterprises, projects and modernization of agriculture. Generally, the SHGs are formed by the Development Agencies and NGOs, which account over 90 per cent of the SHGs at present, are formed and promoted by Development Agencies and the NGOs.

### SHG MEMBERS COMPRISE ONLY POOR PEOPLE

It is essential that only the very poor be considered as the target group for the SHGs-bank linkage programmed, as the formal banks bypass them. Further, though a SHG can be an all-women group or all-men group, or even a mixed group, generally it comprises only women. For experience has demonstrated that women's groups perform better in all the important activities of the SHGs. Mixed groups are not preferred generally, due to conflicting interests among them.

### SHGs ARE SUSTAINABLE BECAUSE

- Members come together due to a felt need, on a platform of affinity and commonality of problems,
- SHGs are savings led and act as adhesive,
- They are characterised by collective and participatory wisdom,
- They give doorstep access to micro finance with near zero transaction cost,
- They offer interface with the banking network.
- They offer platform for women's sustainability.

### MICRO-CREDIT - SELF-HELP GROUP (SHG) - BANK LINKAGE PROGRAMME

Micro-credit has been defined as the provision of thrift, credit and other financial services and products of very small amount to the poor in rural, semi-urban and urban areas for enabling them to raise their income levels and improve their living standards. Micro-credit Institutions provide these facilities.

### SELF-HELP GROUP (SHG) - BANK LINKAGE PROGRAMME

Despite the vast expansion of the formal credit system in the country, the dependence of the rural poor on moneylenders continues unabated in many areas, especially for meeting urgent requirements. Such dependence is pronounced in the case of marginal farmers, landless labourers, petty traders and rural artisans belonging to socially and economically backward classes and tribes whose propensity to save is limited or too small to interest the banks. For various reasons, credit to these sections of society has not been institutionalized. However the studies conducted by the NABARD, APRACA and ILO on the informal groups promoted by non-governmental organizations (NGOs) brought out that Self-Help Savings and Credit Groups have the potential to bring together the formal banking structure and the rural poor for mutual benefit and that their working has been encouraging.

The NABARD accordingly launched a pilot project for the purpose and supported it by way of refinance. It also provided technical support and guidance to the agencies participating in the programme. The following criteria would broadly be adopted by the NABARD for selecting the SHGs:

- a) They should be in existence for at least six months.
- b) They should have actively promoted the savings habit.
- c) They could be formal (registered) or informal (unregistered).
- d) Membership of each group could be between 10 to 25 persons.

The advances given by the banks to these groups were treated as advances to the 'weaker sections' under the priority sector. While the norms relating to margin, security as also scales of finance and unit cost would broadly guide the banks for lending to the SHGs, deviations there from could be made by the banks, where deemed necessary. These relaxations in margin, security norms, etc. were only in respect of the SHGs to be financed under the pilot project.

### EVOLUTION OF SELF-HELP GROUPS

There are three level of evolution of Self-Help Groups. They are;

- At one level households use microfinance to meet 'survival' requirements where small savings and loans serve as a buffer in the event of an emergency or to smoothen consumption or even service previous debt to give itself more liquidity during lean times.
- At the second level, 'subsistence' needs are met through microfinance, where a household begins to utilize microfinance to diversify its basket of income-generating activities, or to meet working capital requirements in traditional activities.
- At the third level as households reach a stage where they can assume a higher degree of risk, microfinance would be used to invest in setting up an enterprise or facilitating entry into employment in one way or the other in order that the household becomes 'sustainable'.

Microfinance can change the lives of the poor. There may not be a quantum jump in the income but it is possible still to ensure a reasonable rise in the income of the poor. The progress of the Self-Help Group movement in India so far has been promising. It has reached out to 34,77,965 Self-Help Groups over the sixteen years.<sup>10</sup> It has shown that the poor can organize themselves and do things to promote their well-being. It has also had a tremendous social impact.

### SUSTAINABLE ASPECTS OF SELF-HELP MICRO-CREDIT SCHEMES

Self-help groups intermediated by micro-credit have been shown to have positive effects on women, with some of these impacts being ripple effects. They have played valuable roles in reducing the vulnerability of the poor, through asset creation, income and consumption smoothing, provision of emergency assistance, and empowering and emboldening women by giving them control over assets and increased self-esteem and knowledge.<sup>11</sup> Several recent assessment studies have also generally reported positive impacts.<sup>12</sup>

In India, micro-credit studies done on groups dealing with dairy farming have noted positive profit levels and short payback periods for loans.<sup>13</sup> Earnings generated from such undertakings have been instrumental in increasing the physical well-being of the household, often through better nutrition and sanitation. The household's asset base has also been enhanced by the addition of jewellery (a portable asset), improved housing and land purchase in some cases.

Studies in several countries point out that loans are sometimes used for consumption smoothing, not production. It has been pointed out that the poor often have short-term liquidity needs (frequently requiring lump-sum payments), which would normally be met by usurious moneylenders if other financial sources such as micro-credit were not available. Sudden and debilitating shocks can force poor households into disempowering situations of distress. During the Asian economic crisis, self-help micro-credit groups served as important cushions and safety nets. A high proportion of the funds made available for self-help micro-credit schemes were utilized by women, enabling them to meet the subsistence needs of their families during those difficult economic times (ESCAP 2002). Many self-help programmes have also incorporated elements of savings, which can be used for purposes such as health insurance and emergency loans, thereby serving as private safety nets.

In the realm of self-confidence and self-esteem, the feedback from the IFAD gender mainstreaming review has been very positive. Reports indicate that women are more able to articulate their views and are able to command attention and respect within the household, and often within the community. Increased self-confidence is especially pronounced when women are exposed to training in women's rights and social and political issues.

In order to enhance the economic and social sustainability of women, and ultimately economic development of the nation, the importance of utilization of female labour force (which accounts for roughly about 50 per cent of the total manpower), has now been well recognized. And now there is no profession or service from which women are barred. Every possible effort is made to strengthen the status of women particularly those in rural areas through appropriate development policies and programmes. One such development effort is the promotion of self-help groups among women and through their collective activities, their economic, and social sustainability is sought to be achieved. In this paper an attempt is made to study how women's sustainability through 'Self-Help Groups-Bank Linkage Programme' activities sought to achieve their economic and social sustainability in Chittoor district of Andhra Pradesh.

This article is completely based upon the primary data collected from the DWCRA/SHG Members in Chittoor District of Andhra Pradesh. It focuses on the motivation of the SHG members by different resource persons in various revenue divisions of Chittoor District to join the SHGs, savings mobilized by the DWCRA/SHG women in different revenue divisions of Chittoor district along with the average levels of savings, internal loans transacted from the year when the group activity was begun by the respective SHG up to December 2009, SHG-Bank linkage programme in the study area, the utilization of SHG-bank linkage loans by the members in different revenue divisions of Chittoor district and the value of assets of different types such as family comforts, agricultural assets including landed property, livestock assets and financial assets such as LIC policies, bonds etc., possessed by the DWCRA/SHG member households before they became the members of the DWCRA/SHGs.

### OBJECTIVES

The following are the specific objectives of the study.

1. To study the motivation of the SHG members by different resource persons in various revenue divisions of Chittoor district to join as members of the SHG,
2. To examine the savings mobilized by the DWCRA/SHG women in different revenue divisions of Chittoor district,
3. To assess the internal loans transacted from the beginning of the group activity by the respective SHG up to December 2009 in the study area,
4. To examine the SHG-Bank linkage programme in the study district, and
5. To study the utilization of SHG-bank linkage loans by the members in different revenue divisions of Chittoor district and the value of assets of different types.

### METHODOLOGY

There are three revenue divisions in the study area viz., Chittoor, Madanapalli and Tirupati. All of them have been included in the study. At the rate of three mandals per revenue division, nine mandals were selected from the entire district using the simple random sampling technique without replacement. Three revenue villages from each of the three revenue mandals, 9 villages in all were selected from each Revenue Division and at the rate of 9 villages from each Revenue Division 27 villages were selected. From each selected revenue village two DWCRA/SHGs were selected using Simple Random Sampling technique without Replacement (SRSWOR) and from each DWCRA/SHG, six women members were selected using the SRSWOR. Thus, on the whole, (27 x 2 =) 54 SHGs and (54 x 6 =) 324 sample SHG members were selected from the entire district. The size of the sample is 324 DWCRA/SHG members.

### MOTIVATION OF THE DWCRA/SHG MEMBERS

The DWACRA movement was started in the Chittoor District in the year 1992. Later under Swarnajayanti Gram Swarozgar Yojana (SGSY) it was converted to Self-Help Group Movement. The Andhra Pradesh Rural Poverty Reduction Project (APRPRP) started functioning in the District with effect from June 2002. The old groups and newly formed groups are strengthened. In all these activities, the facilitating staff such as community co-coordinators, the APMs,

community activists, community resource persons, Village book-keepers, Mandal level book-keepers etc., provided continuous facilitation and support. The defunct groups were also revived and old group were strengthened. On account of motivation and continuous intensive training provided by these persons, the groups have become more active and self-sustainable. Table No. 1 incorporates the information regarding the motivation of the SHG members by different resource persons in various revenue divisions of Chittoor district to join the SHGs.

TABLE NO. 1: MOTIVATION OF THE DWCRA/SHG MEMBERS

S. No.	Motivation Pattern	Caste Group Category					Total & %
		SC	ST	Minorities	BC	OC	
<b>Chittoor Division</b>							
1.	Self motivated	14	11	0	27	9	61 (56.48)
2.	Village SHGs	6	5	0	4	2	17 (15.74)
3.	DWCRA/SM Staff	3	2	0	18	7	30 (27.78)
	<b>Total</b>	<b>23</b>	<b>18</b>	<b>0</b>	<b>49</b>	<b>18</b>	<b>108 (100)</b>
<b>Madanapalle Division</b>							
1.	Self motivated	8	2	4	31	11	56 (51.85)
2.	Village SHGs	6	0	2	13	3	24 (22.22)
3.	DWCRA/SM Staff	1	1	2	16	8	28 (25.93)
	<b>Total</b>	<b>15</b>	<b>3</b>	<b>8</b>	<b>60</b>	<b>22</b>	<b>108 (100)</b>
<b>Tirupati Division</b>							
1.	Self motivated	6	7	1	30	15	59 (54.63)
2.	Village SHGs	7	5	0	10	3	24 (22.22)
3.	DWCRA/SM Staff	1	5	2	10	6	25 (23.15)
	<b>Total</b>	<b>14</b>	<b>17</b>	<b>3</b>	<b>50</b>	<b>24</b>	<b>108 (100)</b>
<b>Total</b>							
1.	Self motivated	28	20	5	88	35	176
	%	53.85	52.63	45.45	55.35	54.69	54.32
2.	Village SHGs	19	10	2	27	8	66
	%	36.54	26.32	18.18	16.99	12.5	20.37
3.	DWCRA/SM Staff	5	8	4	44	21	82
	%	9.61	21.05	36.36	27.67	32.81	25.93
	<b>Total</b>	<b>52</b>	<b>38</b>	<b>11</b>	<b>159</b>	<b>64</b>	<b>324</b>
	%	100.0	100.0	100.0	100.0	100.0	100.0

Note: SM Staff: Sangamitra Staff.

Source: Field Survey Data.

The above Table reveals that out of the 324, DWCRA/SHG members who formed the sample 176 or about 54.32 per cent were self-motivated. This is indeed a remarkable achievement because the poor have realized that their salvation lies in joining the DWCRA/SHG movement and have done so on their own. Another 66 DWCRA/SHG members were motivated by the peer groups in their villages. They constituted 20.37 per cent. The DWCRA/Velugu/IKP/Sanga mitra staff seems to have motivated 25.93 per cent of the SHG members. In other words, the staff of various organizations motivated a little over one-quarter of the SHG women while the other half had joined the SHG movement on their own.

Among the three revenue divisions more than half of the sample women in Chittoor revenue division were motivated on their own to join the DWCRA/SHG members. This is no wonder because; Chittoor is a relatively developed division and has higher levels of awareness among women who have realized that their destiny lies in joining the movement. It was natural that many women in various mandals of Chittoor revenue division willingly joined the SHG movement as they wish to free themselves from the clutches of poverty and backwardness. Self-motivation is the primary motivation factor, for the majority of the sample DWCRA/SM Staff is the second factor of motivation and villages SHGs are the third factor to motivate women to join as SHGs members in the three revenue divisions.

The caste group-wise analysis of motivation of the sample SHG women indicates that 55.35 per cent of them among the BCs, 54.69 per cent among the OCs women were self-motivated. Among the SCs 53.85 per cent and the STs 52.63 per cent were self-motivated. The peer group women in the villages also seem to have exerted pressure and motivated women to join the SHGs. Their proportion was relatively higher among the SCs (36.54 per cent) and the STs (26.32 per cent) than among the minorities (18.18 per cent), the BCs (16.99 per cent) and the OCs (12.50 per cent).

The organizational staff and the NGOs seem to have played a decisive role in motivating the OC and BC women to join fold of the DWCRA/SHG movement. The DWCRA/SHG/Velugu/IKP personnel motivated the remaining 9.61 per cent of the SC members in the villages. In the case of the STs, the DWCRA/SHG/Velugu/IKP personnel influenced a still higher proportion of 21.05 per cent of women. It could be seen from the table that 36.36 per cent of the minorities seem to have joined the SHG movement motivated by the organizational staff and the NGOs. 32.81 per cent of OC women and 27.67 per cent of BC women joined the SHG movement influenced by the DWCRA/SHG/Velugu and the IKP workers. Thus more than half of women of all caste groups' in the district seem to have joined the DWCRA/SHG movement on their own, while the peer group members and the organizational staff played an important role in motivating the women of some caste groups to join the SHGs.

### SAVINGS LEVELS OF MEMBERS OF THE DWCRA/SHGS

As noted already, in Andhra Pradesh, the self-help movement through savings has been a mass movement of women. There are 8.50 lakh women SHGs in Andhra Pradesh covering nearly 111.81 lakh rural poor women. The SHGs not only encourage savings but also enable the members to take small loans out of the corpus available with the group. An amount of Rs. 4025.55 crores was mobilized as corpus among these groups and their savings had accumulated to Rs. 1962.50 as on March, 2009. The state government has taken several initiatives to extend financial support to these groups. During the financial year 2008-09 Rs.11037 crores was been targeted as loan mobilization under the SHG-Bank linkage programme and an amount of Rs.7203.53 crores had been mobilized up to March 2009.<sup>14</sup> In tune with the developments at the state level, the DWCRA/SHGs women in the district also have taken up the uphill task of mobilizing savings out of their limited resources. Table No.2 provides the details of savings mobilized by the DWCRA/SHG women in the three revenue divisions of Chittoor district along with the average levels of savings.

TABLE NO.2: AVERAGE SAVINGS LEVELS OF SHG MEMBERS IN CHITTOOR DISTRICT (Rs.)

S.No.	Category	Savings	Revenue Divisions			Total
			Chittoor	Madanapalle	Tirupati	
1	SC	Average savings per month per member	61.74 (23)	65.67 (15)	69.51 (14)	64.97 (52)
		Average savings of all the group members per month	650.71	640.10	613.17	637.54
		Total group savings up to Dec. 2009	82154	39232	33990	56805
2	ST	Average savings per month per member	66.67 (18)	61.75 (3)	63.15 (17)	64.71 (38)
		Average savings of all the group members per month	766.00	651.16	595.10	680.48
		Total group savings up to Dec. 2009	69256	31256	52736	58865
3	Minority	Average savings per month per member	0 (0)	82.12 (8)	75.21 (3)	80.24 (11)
		Average savings of all the group members per month	0	745.00	635.50	715.14
		Total group savings up to Dec. 2009	0	22310	9932	18934
4	BC	Average savings per month per member	65.72 (49)	70.15 (60)	72.50 (50)	69.52 (159)
		Average savings of all the group members per month	850.16	810.75	842.15	832.77
		Total group savings up to Dec. 2009	100855	120256	100125	107947
5	OC	Average savings per month per member	63.15 (18)	65.16 (22)	68.67 (24)	65.91 (64)
		Average savings of all the group members per month	950.10	973.70	987.30	972.16
		Total group savings up to Dec. 2009	89155	101079	110739	101348
<b>Average savings per month per member</b>			<b>64.60 (108)</b>	<b>69.16 (108)</b>	<b>69.86 (108)</b>	<b>67.88 (324)</b>
<b>Average savings of the total group members per month</b>			<b>810.31 (108)</b>	<b>811.00 (108)</b>	<b>800.10 (108)</b>	<b>807.12 (324)</b>
<b>Total group savings up to Dec. 2009</b>			<b>89656 (108)</b>	<b>101759 (108)</b>	<b>83946 (108)</b>	<b>91787 (324)</b>

Note: Figures in parentheses indicate number of members in the respective division and caste group.

Source: Field Survey Data.

It could be seen from Table No.2 that on average, per DWCRA/SHG member saved an amount of Rs.68 per month in the entire district. In the beginning when the SHG groups were first formed in the state each woman member used to save one rupee per day or thirty rupees per month. But now with the increase in their levels of income and price levels, the members stepped up their savings level to fifty rupees and further to one hundred rupees per month. Consequently, their monthly savings levels considerably increased. The average monthly savings of each member in all the members in the sample amounted to Rs.807 in the district. The average cumulative savings of all the group members up to December 2009 aggregated to Rs.91,787. There were no noticeable variations in the monthly savings of individual members as well as in the average savings of all group members per month. For instance, the average savings per month per member in Chittoor division was relatively lower at Rs.64.60 than that in the two other revenue divisions viz., Madanapalle (Rs.69.16) and Tirupati (Rs.69.86). Similarly the average savings of the members in the group varied narrowing between Rs.800 and Rs.811. On the other hand, the cumulative average monthly savings of all the members in Madanapalle up to December 2009 aggregated to Rs.1, 01,759 compared to Rs.89, 656 in Chittoor and Rs.83, 946 in Tirupati. Since, the DWCRA/SHG members in Madanapalle division started the SHG movement much earlier than their counterparts in the other revenue divisions perhaps because their low levels of living, they were due to save substantially.

The Table also contains the savings of the DWCRA/SHG members caste-wise in the three divisions. Among them, the average monthly savings of the minorities was the highest at Rs.80.24 per member, the saving of the BC members was Rs.69.52, OC members Rs.65.91 and of the SC and ST members Rs.65 each. As the minority members joined the SHGs only recently they started their SHG activity with relatively high levels of savings at Rs.100 per month. This might be the reason for their high level of monthly savings per member. On the other hand, the OC members achieved the monthly savings of Rs.972 per group, much more than that of the BCs (Rs.833), minorities (Rs.715), STs (Rs.680) and SCs (Rs.638). These statistics clearly indicate that in spite of the fact that the weaker sections of society who have been languishing in abject poverty for a very long period were the major stakeholders of the DWCRA/SHG movement in Andhra Pradesh, their capacity to save is still very low and hence, their monthly as well as their cumulative savings were comparatively. The differences in the total savings of different caste group members could be attributed not only to the amount of savings done per month but also to the period of operation of the DWCRA/SHGs. The longer the period of the operation of the SHGs, larger would be the amount of savings and vice versa. The Table also incorporates the revenue division-wise average savings levels for individual members, all the members in the group and their average cumulative savings up to December 2009. There are no remarkable variations in these variables among three revenue divisions of Chittoor district.

An attempt was made to analyse the differences in the average monthly savings per DWCRA/SHG member belonging to the five caste groups in the three revenue divisions by using the ANOVA two-way classification without replication. The results are furnished in the following Table.

TABLE NO. 2A: ANOVA RESULTS FOR AVERAGE MONTHLY SAVINGS LEVELS PER SHG MEMBER

Source of Variation	SS	df	MS	F-cal	P-value	F crit
Rows (Caste Groups)	501.19	4	125.30	0.317	0.859	3.84
Columns (Revenue Divisions)	1073.73	2	536.87	1.360	0.310	4.46
Error	3157.95	8	394.74			
Total	4732.88	14				

Source: Computed for the data presented in Table No.2.

The results of the ANOVA clearly indicate that the calculated F-values are lower than the F-critical value at 5 per cent probability level for both average savings among different caste groups ( $0.317 < 3.84$ ) and in different revenue divisions ( $1.360 < 4.46$ ). These results clearly reiterate the conclusions already drawn that there are no remarkable variations in the monthly savings of the individual members in Chittoor district.

Similar conclusions hold good in the case of the analysis of variations in the average monthly savings levels per DWCRA/SHG group in Chittoor district. These results are furnished in Table No.2B.

TABLE NO. 2B: ANOVA RESULTS FOR AVERAGE MONTHLY SAVINGS LEVELS PER SELF- HELP GROUP

Source of Variation	SS	df	MS	F-cal	P-value	F crit
Rows (Caste Groups)	458416	4	114604	3.041	0.085	3.838
Columns (Revenue Divisions)	39628	2	19814	0.526	0.610	4.459
Error	301502	8	37688			
<b>Total</b>	<b>799546</b>	<b>14</b>				

Source: Computed for the data presented in Table No.2

The analysis of average cumulative group savings of the DWCRA/SHGs in Chittoor as presented in Table No. 2C.

TABLE NO. 2C: ANOVA RESULTS FOR AVERAGE CUMULATIVE SAVINGS UP TO 31<sup>ST</sup> DECEMBER 2009

Source of Variation	SS	df	MS	F-cal	P-value	F crit
Rows (Caste Groups)	18980273581	4	4745068395	13.865	0.001	3.838
Columns (Revenue Divisions)	129157340	2	64578670	0.189	0.832	4.459
Error	2737842409	8	342230301			
<b>Total</b>	<b>21847273330</b>	<b>14</b>				

Source: Computed for the data presented in Table No. 2.

The above Table reveals that there are statistically significant differences in the average cumulative savings of different caste group members as the computed F-value is greater than the table or critical F-value (13.865 > 3.838). On the other hand, the computed F-value is less than the theoretical or critical F-value (0.189 < 4.459) in the case of average cumulative savings in the three revenue divisions of Chittoor district. This reiterates the conclusions that there are no statistically significant variations in the average cumulative savings of the DWCRA/SHGs in the three study revenue divisions.

#### Internal Loans Transacted by the DWCRA/SHG Members

The resources generated by the members of the DWCRA/SHG groups by way of pooled savings of the members, the revolving fund and/or the matching grant provided by the government are pooled together either at the group level, or at the village level or at the mandal level. Whenever any member is in need of money for consumption, education, health, or production purposes, a decision is taken in the weekly group meeting, and the money is provided to the needy person without insisting on any security. The borrowed money is repaid either in equal instalments or in lump sum according to the convenience of the member. Sometimes the members of the group undertake some fruitful economic activity either collectively or individually so that they can earn some income to stand on their own legs. As recorded information is not available on the amount of internal loan transacted, in some cases, memory recall method was used to elicit information. Since, there may be memory lapses on the part of the SHG members, the quantum of internal loans transacted may not be exact and only rough estimates are given by them. Table No.3 presents the details of internal loans transacted from the beginning of group activity by the respective SHGs upto December 2009.

TABLE NO. 3: INTERNAL LOANS TRANSACTED BY THE SHG MEMBERS

S. No.	Category	Internal Loans	Revenue Divisions			Total
			Chittoor	Madanapalle	Tirupati	
1	SC	Average Loans	8500 (23)	7300 (15)	9150 (14)	8329 (52)
		Average R/I %	18	24	12	18.12
2	ST	Average Loans	6400 (18)	6000 (3)	7200 (17)	6726 (38)
		Average R/I %	12	12	12	12.00
3	Minorities	Average Loans	0 (0)	4500 (8)	5000 (3)	4636 (11)
		Average R/I %	0	18	24	20
4	BC	Average Loans	9500 (49)	8600 (60)	10500 (50)	9475 (159)
		Average R/I %	24	18	18	19.85
5	OC	Average Loans	12000 (18)	10500 (22)	11000 (24)	11109 (64)
		Average R/I %	18	12	12	13.69
<b>Total Internal Loans</b>			<b>9187 (108)</b>	<b>8431 (108)</b>	<b>9764 (108)</b>	<b>9127 (324)</b>
<b>Total Average rate of Interest %</b>			<b>19.72</b>	<b>17.44</b>	<b>15.11</b>	<b>17.43</b>

Note: Figures in parentheses indicate number of members in the respective division and caste group.

Source: Field Survey Data.

It could be seen from the Table that the average amount of loans transacted by the members of the SHGs upto December 2009 amounted to Rs.9,127 in the three revenue divisions put together. The average rate of interest charged in the entire district calculated on the basis of weighted average rate of interest charged to each member turned out to be 17.43 per cent.

There are variations in the amount of internal loans transacted among the members in the three revenue divisions as well as among different caste group members in Chittoor district. As could be observed from the table the average amount of internal loans transacted by the DWCRA/SHG members in Chittoor division amounted to Rs.9,187 which is marginally higher than the district average of Rs.9,127. On the other hand, the average amount of internal loans transacted among the members in Madanapalle division is considerably lower at Rs.8,431 as compared to the district average. Interestingly, the DWCRA/SHG members in Tirupati division seemed to have better utilized the opportunities and transacted the highest amount of Rs.9,764 upto December 2009. The average rate of interest charged is also relatively low at 15.11 per cent as against 19.72 per cent in Chittoor division and 17.44 per cent in Madanapalle division. This might be due to the fact that because of relatively higher level of urbanization in Tirupati division, there was greater demand for small business loans and hence, the average amount of loan transacted in the division was very high. As the economic theory goes, the rate of interest charged is inversely related to the size of loan and hence, the rate of interest charged was also very low in the revenue division. Since, Chittoor division was also relatively urbanized, the average amount of internal loans transacted was also relatively high next only to Tirupati division. The converse could be said about the average amount of internal loans transacted in Madanapalle division.

The caste hierarchy and size of internal loans transacted seemed to have correlated to a higher degree in Chittoor district. The average amount of internal loans rotated among different caste group members was the highest for the OC members at Rs. 11, 109 followed by that for the BC members at Rs.9, 475 and SC members at Rs.8,329. The minority members and ST members could not have utilized the opportunities to avail themselves of the convenient internal loans. The average amount of internal loans that have circulated among the minority members was the lowest at Rs. 4,636 only. The ST members seemed to have

exhibited a better performance than their counterparts among the minorities with an average amount of loans of Rs.6, 726. There considerable variations in the quantum of internal loans that have been rotated among the DWCRA/SHG members belonging to different caste group members in the revenue divisions of Chittoor district. This could be better understood from the ANOVA results furnished in Table No. 3A.

**TABLE NO. 3A: ANOVA RESULTS FOR INTERNAL LOANS TRANSACTED BY THE SHG MEMBERS**

Source of Variation	SS	df	MS	F-cal	P-value	F crit
Rows (Caste Groups)	112986000	4	28246500	14.581	0.001	3.838
Columns (Revenue Divisions)	5150333	2	2575167	1.329	0.317	4.459
Error	15498000	8	1937250			
<b>Total</b>	<b>133634333.3</b>	<b>14</b>				

Source: Computed for the data presented in Table No.3.

As could be seen from the above Table, F-value of 14.581 computed for the average amount of internal loans transacted by different caste group members is significantly higher than the F-critical or theoretical or table value of 3.838 for the same variable. This again reiterates the conclusion drawn above that there are significant variations in the average amount of internal loans transacted by different caste group members in the district. Hence, the statistical Null Hypothesis that there are no significant variations in the average amount of internal loans transacted by different caste group members in the study is rejected. The same conclusion is also reiterated by the lower (0.001) p-value than the significant level of 5 per cent or (0.05) chosen for the test. However, there are no statistically significant differences in the average amount of internal loans transacted by the members in the different revenue divisions. This is evident from the fact that the computed F-value is less than the table value (1.329<4.459) for this variable. By the same taken, it can also be stated that the computed p-value (0.317) is higher than the chosen level of 5 per cent or 0.05 probability level of significance.

An attempt was also made to analyse the significance of differences in the average rate of interest charged for internal loans by different caste group members and in different revenue divisions by means of two-way ANOVA without replication. The results are furnished in Table No.3B.

**TABLE NO. 3B: ANOVA RESULTS FOR AVERAGE INTEREST RATE CHARGED FOR INTERNAL LOANS BY DIFFERENT CASTE GROUP MEMBERS IN DIFFERENT REVENUE DIVISIONS**

Source of Variation	SS	df	MS	F-cal	P-value	F crit
Rows (Caste Groups)	129.6	4	32.4	0.621	0.661	3.838
Columns (Revenue Divisions)	14.4	2	7.2	0.138	0.873	4.459
Error	417.6	8	52.2			
Total	561.6	14				

Source: Computed for the data presented in Table No. 3.

The above Table clearly indicates that there are no statistically significant variations in the average rate of interest charged for internal loans by members of different caste group members and in the three revenue divisions. The calculated F-values for both rows (caste-groups) and columns (Revenue Divisions) are less than the table or critical F-values at 5 per cent probability level and more than the computed p-values at the same level of significance.

### SHGS–BANK LINKAGE LOANS DISBURSED

Internal loans are not the only source of finance to the DWCRA/SHG groups. In recent years National Bank for Agriculture and Rural Development (NABARD) has taken up the stupendous task of linking formal financial institutions like commercial banks, regional rural banks and cooperative societies with the SHGs and extended loans to the latter at liberal terms without insisting upon any security except the collective responsibility assumed by the group members themselves. These loans are refinanced by the NABARD.<sup>15</sup> The rate of interest is also very low. The state government of Andhra Pradesh has introduced a novel programme of extending finance to the SHG members at the interest rate of 3 per cent per annum. This scheme is known as "Pavala Vaddi" scheme. Table No.4 presents the details of the SHG-bank linkage prgramme in Chittoor district.

**TABLE NO. 4: SHG-BANK LINKAGE LOANS DISBURSED TO THE SHG MEMBERS**

S. No.	Category	Details	Revenue Divisions			Total
			Chittoor	Madanapalle	Tirupati	
1.	SC	Average SHG Loan per member	45521 (23)	25565 (15)	22608 (14)	33596 (52)
		Average R/I	12.50	12.00	12.25	12.89
		Total Outstanding	10956	39200	6286	17838
2.	ST	Average SHG Loan per member	51705 (18)	66000 (3)	22112 (17)	39595 (38)
		Average R/I	12.50	12.00	12.00	12.24
		Total Outstanding	13167	12000	7252	18630
3.	Minority	Average SHG Loan per member	0 (0)	18117 (8)	20000 (3)	18630 (11)
		Average R/I	0	12.00	12.50	12.14
		Total Outstanding	0	38500	14000	31818
4.	BC	Average SHG Loan per member	36575 (49)	45616 (60)	18047 (50)	34160 (159)
		Average R/I	12.00	12.15	12.50	12.21
		Total Outstanding	6391	8863	9667	8437
5.	OC	Average SHG Loan per member	34510 (18)	32625 (22)	21420 (24)	28953 (64)
		Average R/I	12.50	12.25	12.00	12.23
		Total Outstanding	7000	6727	11040	8594
<b>Average SHG Loan per member</b>			<b>40658 (108)</b>	<b>38714 (108)</b>	<b>20082 (108)</b>	<b>33151 (324)</b>
<b>Total Average Rate of Interest</b>			<b>12.50 (108)</b>	<b>12.13 (108)</b>	<b>12.28 (108)</b>	<b>12.30 (324)</b>
<b>Total Outstanding</b>			<b>8594 (108)</b>	<b>14924 (108)</b>	<b>9274 (108)</b>	<b>10931 (324)</b>

Note: Figures in parentheses indicate number of members in the respective division and caste group.

Source: Field Survey Data.

Table No. 4 reveals that the average amount of SHG loan transacted in all the three study divisions upto December 2009 amounted to Rs.33, 151per member. Among the three divisions, the average amount of bank loans extended to the SHGs is very high in Chittoor division with an amount of Rs. 40, 658 followed by Madanapalle and Tirupati divisions with an amount of Rs.38, 714 and Rs. 20, 082 respectively. Nevertheless, there are no remarkable variations in the average rate of interest charged by the banks. The total amount of SHG loans outstanding is Rs.10, 931 in the entire district. It is the highest in Madanapalle division with an amount of Rs.14, 942 followed by Tirupati and Chittoor divisions with an average outstanding amount of Rs.9, 274 and Rs.8, 594 respectively. The analysis of caste group-wise average amount of SHG-bank loans disbursed reveals that there are no marked variations in the amount of loans obtained by the DWCRAs/SHGs of different caste groups. The ST members of the groups seem to have received the highest average amount of bank loans at Rs.39, 595 followed by the BCs (Rs.34, 160), the SCs (Rs.33, 596) and the OCs (Rs.28, 953). In other words, the minority members of the DWCRAs/SHGs seem to have received the lowest amount of Rs.18, 630. There are no noticeable variations in the rate of interest charged to the loans disbursed to different caste group members. However, the amount of loans outstanding is very high in the case of loans taken by the minority members at Rs.34, 160. This might be due to the fact that these members joined the DWCRAs/SHGs recently and also raised loans only very recently. On the other hand, the amount loan outstanding is very low in the case of the BC (Rs.8437) and the OC (Rs.8594) members. Thus caste factor also seems to have play an important role in the repayment of SHG bank loans. Though there are inter-revenue division and inter-caste group variations in the average amount of SHG-bank loans disbursed in the district, these variations seem to have no statistical significance. The relevant information is provided in Table No. 4A.

**TABLE NO. 4A: ANOVA RESULTS FOR DIFFERENCES IN THE AVERAGE AMOUNT OF SHG-BANK LINKAGE LOANS PROVIDED TO DIFFERENT CASTE GROUP MEMBERS IN DIFFERENT REVENUE DIVISIONS**

Source of Variation	SS	df	MS	F-cal	P-value	F crit
Rows (Caste Groups)	1757470012	4	439367503	2.736147	0.10528	3.8379
Columns (Revenue Divisions)	767215708	2	383607854	2.388905	0.15365	4.459
Error	1284631468	8	160578933			
<b>Total</b>	<b>3809317187</b>	<b>14</b>				

Source: Computed for the data presented in Table No. 4.

As could be observed from the above Table, the F-computed value for differences in the average amount of SHG loans provided to different caste-groups (rows) is less than the corresponding critical F-value at 5 per cent level of significance. Similarly, the calculated F-value for differences in the average amount of SHG loans provided to SHG members in different revenue divisions (columns) is also less than the corresponding critical or table or theoretical F-value. This implies that the observed differences in the average amount loans among different caste groups and in different revenue divisions are within the theoretically permissible limits and hence these differences could be attributed to fluctuations of sampling. A similar conclusion could also be drawn on the basis of the given p-values 0.105284 and 0.153651 that are lower than the chosen 0.05 probability level.

An attempt was also made to analyse the differences in the average amount of loans outstanding in the case of different caste groups and in the three divisions using the ANOVA technique. The relevant details are furnished in Table No.4B.

**TABLE NO. 4B: ANOVA RESULTS FOR DIFFERENCES IN THE AVERAGE AMOUNT OF SHG-BANK LINKAGE LOANS OUTSTANDING WITH DIFFERENT CASTE GROUP MEMBERS AND IN DIFFERENT REVENUE DIVISIONS**

Source of Variation	SS	df	MS	F-cal	P-value	F crit
Rows (Caste Groups)	309152458	4	77288115	0.68696	0.62086	3.8379
Columns (Revenue Divisions)	530858171	2	265429085	2.35922	0.15654	4.459
Error	900056471	8	112507059			
<b>Total</b>	<b>1740067100</b>	<b>14</b>				

Source: Computed for the data presented in Table No. 4.

It could be seen from the Table that the computed F-test value 0.686962 for differences in the average amount of loans outstanding among different caste group members in the district is lower than the critical or table F-value 3.837853 and that the computed F-test value 2.359222 for differences in the average amount of loans outstanding among members in different revenue divisions in the district is lower than the critical or table F-value 4.45897. Hence the relevant null hypothesis is accepted. Therefore, it can be concluded that there are no statistically significant differences in the amount of loans outstanding for different caste group members in the district. The same conclusion emerged from the analysis of p-values that are lower than the critical level of 0.05 chosen for the study.

#### PURPOSE OF UTILIZATION OF SHGS-BANK LINKAGE LOANS

The SHGs-bank linkage loans obtained by the DWCRAs/SHG members could be used for different purposes. Some of them might be more productive and the others might be less productive. Table No. 5 incorporates the details of the utilization of SHGs-bank linkage loans by the members in the three divisions of Chittoor district.

TABLE NO. 5: PURPOSE OF SHG LOANS IN TERMS OF NUMBER OF MEMBERS

S. No.	Purposes	Caste Group Category					Total
		SC	ST	Minorities	BC	OC	
<b>Chittoor Division</b>							
1	Education	2	1	0	2	1	6
2	Business	2	2	0	9	6	19
3	Agriculture	10	9	0	17	5	41
4	House Exp.	6	4	0	12	2	24
5	Artisan exp.	0	0	0	3	0	3
6	Cattle Rearing	2	2	0	4	2	10
7	Social Functions	1	0	0	2	2	5
	<b>Total</b>	<b>23</b>	<b>18</b>	<b>0</b>	<b>49</b>	<b>18</b>	<b>108</b>
<b>Madanapalle Division</b>							
1	Education	0	0	1	6	0	7
2	Business	5	2	2	19	8	36
3	Agriculture	6	1	3	16	7	33
4	House Exp.	3	0	2	12	5	22
5	Artisan exp.	0	0	0	2	0	2
6	Cattle Rearing	0	0	0	3	1	4
7	Social Functions	1	0	0	2	1	4
	<b>Total</b>	<b>15</b>	<b>3</b>	<b>8</b>	<b>60</b>	<b>22</b>	<b>108</b>
<b>Tirupati Division</b>							
1	Education	1	0	0	3	2	6
2	Business	4	3	1	16	6	30
3	Agriculture	3	5	0	11	4	23
4	House Exp.	4	4	2	11	6	27
5	Artisan exp.	0	0	0	2	0	2
6	Cattle Rearing	2	2	0	5	4	13
7	Social Functions	0	3	0	2	2	7
	<b>Total</b>	<b>14</b>	<b>17</b>	<b>3</b>	<b>50</b>	<b>24</b>	<b>108</b>
<b>Total</b>							
1	Education	3	1	1	11	3	19
	%	5.77	2.63	9.09	6.12	4.69	5.86
2	Business	11	7	3	44	20	85
	%	21.15	18.42	27.27	27.67	31.25	26.23
3	Agriculture	19	15	3	44	16	97
	%	36.54	39.47	27.27	27.67	25.00	29.94
4	House Exp.	13	8	4	35	13	73
	%	25.00	21.05	36.36	22.01	20.31	22.53
5	Artisan Exp.	0	0	0	7	0	7
	%	0.00	0.00	0.00	4.40	0.00	2.16
6	Cattle Rearing	4	4	0	12	7	27
	%	7.69	10.53	0.00	7.55	10.94	8.33
7	Social Function	2	3	0.00	6	5	16
	%	3.85	7.89		3.77	7.81	4.93
	<b>Total</b>	<b>52</b>	<b>38</b>	<b>11</b>	<b>159</b>	<b>64</b>	<b>324</b>
	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Field Survey Data.

As could be observed from the Table above that agriculture, business and household expenditure are the three most important purposes to which the SHG-bank linkage loans seem to have been put. About 29.94 per cent of the members utilized the loan amount for meeting agricultural expenditure. Since the district is predominantly agriculture-oriented district and that the agriculture provides sustenance to major part of the people, there is no wonder that a number of members spent their loan amount to meet agricultural operations. Another 26.23 per cent of the members used the amount for undertaking various petty business activities to earn an independent income and to stand on their own legs. About 22.53 per cent of the members in the district utilized the amount to meet the household expenditure.

The household consumption expenditure appears to be as important as the production expenditure in micro-finance analysis. Hence, it cannot be said to be an unproductive expenditure. Next to agriculture, cattle rearing such as rearing sheep, goats, cows and buffaloes seem to be a very important productive activity in rural areas. About 8.33 per cent of the members have used the loan amount for this purpose in the district. About 5.86 per cent of the members used the loan to provide better education to their children. Social functions also seemed to have gained some portion of the SHG loans. About 4.93 per cent of the members seemed to have diverted some portion of their loans for this purpose only 2.16 per cent of the members utilized the loan for buying tools for carpentry, weaving, pottery etc, to carry out their traditional activities.

The caste group-wise analysis of the purpose of utilization of SHG loan indicates that a higher proportion of the SHG bank loan amount utilized by the OC BC and minority members to meet business expenditure than the district average. On the other hand, the SC and ST castes seem to have used the loan amount to meet their agricultural operations than the district average as well as their counterparts among other caste groups. There are no significant variations in the number of members using the amount to meet the household needs among various caste groups except the fact that a relatively higher proportion of the SC, ST and minority members diverted the amount to such needs. Interestingly, only the BC members of the groups used the amount to buy artisan instruments.

The revenue division wise analysis of the use of SHGs-bank loan amount to various purposes indicates no noteworthy variations among the three revenue divisions except the fact that a relatively larger proportion of members in Chittoor division used the amount for meeting the agricultural operations than their counterparts in the other divisions. On the other hand, a relatively larger proportion of members in Madanapalle (36 out of 108) and in Tirupati (30 out of 108) used the amount to undertake business activities than their counterparts in Chittoor division (19 out of 108). Apart from these noticeable differences there are no other differences in the pattern of utilization of the SHGs-bank linkage amount in the three revenue divisions in Chittoor district.

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**EMOTIONS: A TACTICAL DEVICE IN NEGOTIATION STRATEGY****SHANWAL, V.K.****HEAD****DEPARTMENT OF SOCIAL SCIENCES****SCHOOL OF HUMANITIES & SOCIAL SCIENCES****GAUTAM BUDDHA UNIVERSITY****GREATER NOIDA, GAUTAM BUDH NAGAR -201 308****SINGHAL, N.****ASST. PROFESSOR****DEPARTMENT OF SOCIAL SCIENCES****SCHOOL OF HUMANITIES & SOCIAL SCIENCES****GAUTAM BUDDHA UNIVERSITY****GREATER NOIDA, GAUTAM BUDH NAGAR -201 308****ABSTRACT**

*Equilibrium is the law of nature and human disposition is no exception to it. Every person attempts to maintain balance in his life but because of the modern life, words like stress and conflict have entered into our daily routine vocabulary. It's a proven fact that conflicts can create turmoil which has a detrimental effect on our physical as well as mental health. Negotiation is one of the most effective defence-mechanism to resolve various conflicts. Negotiation is a composite of cognitive and emotional activity. The negotiators undergo a myriad of experiences and at the same time, face the challenge of keeping one-upmanship. In the process they have to take into account their own preferences and limits while simultaneously trying to monitor and check the opponent's behaviour. Besides this they have to constantly look for loopholes in the opponent's armour. This makes the process all the more complex because the negotiator has to keep on devising changes in the predetermined tactics and the strategy. This study is to identify different approaches which aim at deliberate and target-oriented positioning of the involved parties as well as ascertain the dynamics involved in decision-making process. And how this results in eliciting desired responses. The endeavour is to propose a model that creates the most beneficial outcome without disturbing the equilibrium.*

**KEYWORDS**

Negotiation strategy, Emotions, Equilibrium.

**INTRODUCTION**

Conflict may be defined as a struggle or contest between people with opposing needs, ideas, beliefs, values, or goals (Retrieved from website). In present times conflict is part and parcel of anyone's way of life. Conflicts occur due to a variety of reasons: there might be variance, clash, difference or dispute over vested interests. It's a simple fact of life, but when one faces it, it is annoying, irritating, exasperating, infuriating or maddening, depending on the degree of seriousness of the conflict. Conflict can be positive, if we manage it effectively and everyone involved is willing to work towards a positive outcome and find a collaborative solution. If not, it can eat away at us like termites on a rotting wood. The bottom line is that it is a discomforting situation and the resultant is the creation of stress.

Stress refers to the pressure that life exerts on us and the way this pressure makes us feel. (McEwen, 2002)

Stress is often defined as "the response of the body to threat or demands" (Schiraldi & Kerr, 2002). Stress is a mildew which can cause hazardous effects on anyone's wellbeing: this wellbeing is the sum total of physical and mental health. When stress is added upon with other problems it disrupts the equilibrium in one's life and makes even the elementary tasks appear complex. Our response to stressful situations changes the equilibrium of our organism. It can have an alarming effect on behavioural and psychological aspects of life.

To regain the balance, stress needs to be eliminated and for this conflict situation should be resolved. How we engage with conflict can differ from one situation to the next, and there may be various responses to conflict.

"There are three ways of dealing with difference: domination, compromise, and integration. By domination only one side gets what it wants; by compromise neither side gets what it wants; by integration we find a way by which both sides may get what they wish" (Mary Parker Follett, 2003). The Thomas-Kilmann Conflict Mode Instrument (TKI) has been used successfully for more than 30 years to help in understanding how different conflict styles affect personal and group dynamics. The TKI measures five "conflict-handling modes," or ways of dealing with conflict: competing, collaborating, compromising, avoiding, and accommodating. These five modes can be described along two dimensions, assertiveness and cooperativeness. Assertiveness refers to the extent to which one tries to satisfy his or her own concerns, and cooperativeness refers to the extent to which one tries to satisfy the concerns of another person (Thomas & Kilmann, 1974, 2007). One might try to postpone coming face to face with the situation or defer it indefinitely. In relationships this can lead to resentment and ultimately fuel further conflicts. This is a lose-lose situation. In another scenario one may want to have his way and not allow for a compromise. This is a win-lose response. Sometimes a person is happier by giving up or accommodating to let other person have his way. It is a lose-win situation.

A lose-lose situation is possibly created when opponents choose to delegate the decision – and by extension the conflict – to another authority. This is a risky approach, as the delegated authority could resolve the conflict, but not necessarily in both parties' interest. In other times one can be satisfied when compromise is made and both parties give in a little. It may be termed as a win-lose/win-lose situation.

And last but not the least the response that we should strive towards, when everyone involved comes to a solution together and all needs are addressed. We get a win/win situation. The perfect equilibrium is achieved. But does this happen often? Let's examine the following scenarios:

"Ten years old, Rohan, asking for two hours relaxation in bedtime and settling down for 45 minutes."

"23 year old Ritesh is on cloud nine. He has just started his career after facing a rigorous interview. He is elated because he is one of the highest paid employees because he had negotiated the salary effectively."

"There is endless number of meetings, summits and round table talks to resolve Indo-Pak conflict. But the resultant is always an impasse".

The ideal state of affairs would be a win-win situation. But at times it can be a total loss or it might be a compromise. Be it personal life, professional life or public life, negotiations happen all the time, at all levels and everywhere. The spectrum is just astounding. It spans across intrapersonal, interpersonal, business, organizational and national boundaries. In conflict situations, the parties try to take a stand and want to get the maximum leverage out of the situation. To resolve the contradiction, negotiation is the answer. When friendship, authority, reciprocity or requests fail to influence others to give us what we want, negotiation becomes a more prominent choice (Watkins, 2001).

## EMOTIONS: A CATALYST IN NEGOTIATIONS

Negotiation is one of the most common and constructive ways of dealing with social conflict. It may be defined as the joint decision making between interdependent individuals with divergent interests (Pruitt, 1998). Negotiating is a complex and cognitively taxing venture. Negotiators need to keep in mind their own preferences and limits and, at the same time, monitor the opponent's behaviour, try to locate his or her limits, and combine all this information to design an optimal strategy (Shu Li & Roloff, 2004). In the 1980s and 1990s, most negotiation research was conducted under a cognitive decision-making framework, which viewed the negotiator as a decision maker faced with an opponent and a situation (Neale and Bazerman 1992). But negotiation is a valuable context in which to explore the consequences of emotions, because negotiations can at times be infused with emotion (Kumar, 1997) and these emotions can shape how we feel about the negotiation and objective outcomes. (Baron, 1990); (Foo & et.al. 2004)

Emotions evolved in part because they provide a valuable mechanism for individuals to coordinate their relationships and interactions with others (Keltner & Haidt, 1999; Morris & Keltner, 2000). There are various components of emotional processes, such as displayed emotions (e.g., Pugh, 2001; Tsai, 2001), emotional labour (e.g., Ashforth & Humphrey, 1993; Hochschild, 1983), and emotional contagion in groups (Barsade, 2002). The outcome of the natural progression towards understanding emotions would be 'Cultivation of Emotional Intelligence'. In its ideal state, EI is the ability to regulate emotion in the self, enabling a more rapid recovery from psychological distress; and the ability to use emotions to facilitate performance by guiding them towards constructive activities and personal performance (Ashkanasy, Härtel, & Zerbe, 2000; Law, Wong, Song, 2004; Mayer, Salovey & Caruso, 2000; Mayer & Salovey, 1997). Emotional Intelligence captures a range of the abilities that includes perceiving emotion, facilitating thought with emotion, understanding emotion, and regulating emotion (Mayer, Salovey, & Caruso, 2000). In EI terms, it is called "emotional literacy" (Mayer and Salovey, 1993). This definition covers four aspects:

The ability to accurately perceive and express emotion in the self;

The ability to recognize and appraise the emotion in others;

The ability to regulate emotion in the self, enabling a more rapid recovery from psychological distress; and

The ability to use emotions to facilitate performance by guiding them towards constructive activities and personal performance (Ashkanasy, Härtel, & Zerbe, 2000; Law, Wong, Song, 2004; Mayer et al., 2000; Salovey & Mayer, 1997; Mueller & Curhan, 2006); (Foo et al.2004).

What we understand by negotiation process is that it is the combination of cognitive and emotional abilities. Researchers and theorists have emphasized the range of cognitive, intrapersonal, and interpersonal abilities needed to enact the challenging process inherent in complex negotiations (e.g., Barry, & Friedman, 1998; De Dreu et al., 1999; Forgas, 1998). It typically manifests itself with a trained negotiator. And if EI is the about a conscious effort for making use of emotions, it can be done in accordance with a plan or a pre-defined strategy and emotions can be used as the means to achieve the end specified in the strategy. In this study we make an attempt to bring together various approaches, involving use of emotions, towards negotiations to draw maximum possible gain out of negotiations.

## EMOTIONS IN NEGOTIATION STRATEGY FORMULATION

Strategic emotion or the "on-demand emotional expression" is a specific type of emotional display that can be highly cognitive and influential (Barry 1999). Strategic emotion involves the use of emotional expression as influence tactics; it requires cognitive evaluation on the part of the negotiator who uses these tactics (the strategist).

The emotion management literature indicates that emotional expression as negotiation strategy is closely linked with one's objectives, predispositions and competencies regarding effective display of emotions. Imagine a negotiator who plans for a display of fury to extract a concession from his opponent but who, having a generally happy and agreeable disposition, is incapable of executing such negative behaviour and, contrary to his intention, exhibits a much milder affect state that is not compelling to his opponent at all. Put another way, successful strategic emotion requires accurate assessment of the emotional needs in specific situations, integration of such needs with one's affective tendencies (e.g., some are more prone to positive or negative emotional display than others), and efficacy in deploying the strategy (Li & Roloff, 2004).

The study of emotion and negotiation characterized by social functionalist approach posits that emotion is informative, evocative, and serves as an incentive in social interactions and causes social consequences (Keltner & Kring, 1998). Emotional expressions may also influence behaviour in more competitive settings. Van Kleef, De Dreu, and Manstead (2004) investigated the interpersonal effects of anger and happiness in conflict and negotiation. In a computer-mediated negotiation, participants received messages from their (simulated) opponent that included verbal expressions of emotion. Participants with an angry opponent made larger concessions than did participants with a non-emotional opponent, and participants with a happy opponent made smaller concessions. Negotiators with an angry opponent inferred that the opponent had a high limit (inference), which led them to concede to avoid impasse (strategic behaviour). Negotiators with a happy opponent estimated the opponent's limit to be low, and accordingly they conceded less (Van Kleef, 2009).

There are contradictions to the aforementioned findings regarding the responses to the positive and negative emotional display or affect. For example, positive emotion can signal cooperativeness and trustworthiness, elicit cooperation, trust, and concession from others, and promise rewards for others. Negative emotion, on the other hand, impresses the other party as aggressive, competitive, and reckless, elicits compliance from the other party, and signals punishment or negative consequences for the non-complying opponent (Thompson et al.2001).

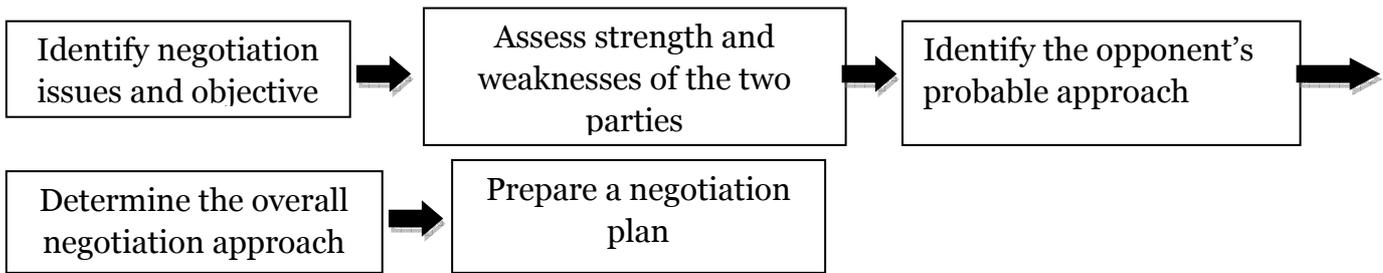
The interpersonal effects of anger and happiness are the result of a process of strategic decision making on the part of the emotion-perceiving negotiator. In other words, negotiators use the information about the other's emotion to design their own negotiation strategy (Van Kleef et al. 2004).

Gerben A. Van Kleef proposed the EASI (Emotions as Social Information) model that is rooted in a social-functional approach to emotion (Frijda, 1986; Keltner & Haidt, 1999; Parkinson, 1996). The premise of this perspective is that, just as mood provides information to the self (Schwarz & Clore, 1983); emotional expressions provide information to observers, which may influence their behaviour. For example, communicating anger may signal that someone's behaviour is undesirable and that adjustment is needed (Averill, 1982); (Van Beest, Van Kleef, Van Dijk 2008). Emotional expressions can also wield interpersonal influence by eliciting affective reactions in observers, which may subsequently affect their behaviour. Such affective reactions consist of two types. First, emotions may spread directly from expresser to observer via emotional-contagion processes, involving mirror-neuron activity, mimicry, and afferent feedback (i.e., physiological feedback from facial, vocal, and postural movements).

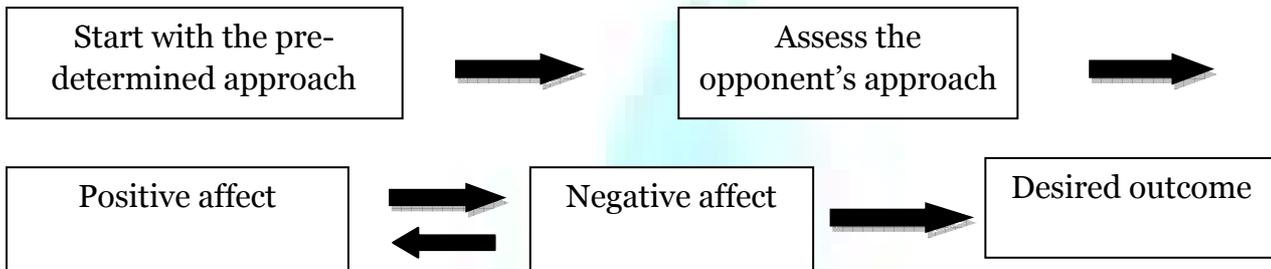
The problem-solving strategy includes tactics such as the exchange of truthful information about needs and priorities, and a set of tactics referred to as "trial and error," involving (a) frequently changing one's offer; (b) seeking the other's reaction to each offer; (c) making larger concessions on items of lower priority; and (d) systematic concession making, where a negotiator explores various options at one level of value to himself/herself before proceeding to a lower level. The contending strategy includes tactics such as threats, positional commitments, contrived arguments designed to get the other to concede, and efforts to raise one's status in the other party's eyes. Past research (summarized in Pruitt, 1981) has found that contentious tactics interfere with the discovery of integrative solutions and that problem-solving tactics facilitate the discovery of integrative solutions (when yielding is prevented) (Carnvale & Isen 1986).

## NEGOTIATION ISN'T ONLY A TEST OF WITS; IT'S ALSO A TEST OF NERVES

Juxtaposition of emotional competency and cognitive competency is crucial in making of an effective negotiator. These competencies may be intrinsic or they may be acquired. An able negotiator should have the ability to think creatively and recognize unique approaches for conducting effective negotiation sessions. Before the final act on the stage, preparations have to be made. Laying out a broad outline or a roadmap is analogous to making a strategy. Blueprint of the negotiation process would permit the negotiators to maximize the ability to obtain best value. Preparation of this blueprint is an extensive as well as intensive exercise. The presented paper proposes a model which can prove to be beneficial in empirical research in future.



**On the Negotiation Table**



Cognitive abilities contribute in exercising attention to details required to plan for the negotiation successfully. This includes gathering, organizing and retaining the related information. Potential negotiation issues needs to be identified. There can be Non-negotiable issues or "must points"; Issues open to concession or "give points"; Issues to avoid during negotiations or "avoid points"; Issues open to bargaining or "bargaining points". Identifying beforehand, the trade off positions that might be acceptable, can become handy during the negotiation. In addition to these he should be able to foresee opponent's probable negotiation styles and approaches. It would be beneficial to estimate opponent's objectives and priorities and also analyse what pressures and constraints will affect the offeror's approach.

SWOT analysis (analysis of strength, weaknesses, opportunities and threats for self and the opponent) by Albert S. Humphrey can prove to be advantageous because bargaining power comes in many forms and is never totally one-sided because both parties have bargaining strengths and weaknesses. The perception of the strengths and weaknesses has effect on both the parties. There might be the possibility that what is perceived does not exist in reality. Whether the perceptions are based on reality or are imaginary, in both the conditions they will influence the negotiation outcome. Apparently, it seems that cognitive abilities would suffice for the successful negotiation but emotions are infused in it and inherent to the process.

The strategic use of emotion in negotiation, according to Barry (1999), is "the wilful use of emotional display or expression as a tactical gambit by an individual negotiator" (p. 94). Various emotion regulation strategies have different implications for attitudes, emotions, and behaviours. (Gross, 1998; Totterdell & Parkinson, 1999) Becoming an emotionally intelligent negotiator involves not only the awareness and regulation of emotion but also the creative and adaptive use of emotion is paramount. Emotions can have an effect on the behaviour of the negotiator experiencing them, on the other party perceiving them, on the relationship between the parties, and on the negotiated outcome. Emotional awareness of our own feelings as well as those of others is the key to becoming an emotionally intelligent negotiator.

After deciding upon substantive goals and strategy, emotions can be used tactically to aid the process. To use an integrative strategy and to promote creativity, trust and cooperation, the negotiator has to create positive affect in self and others—by experiencing it, expressing it, and stimulating it in others. If the negotiation involves parties with whom the negotiator already has or wish to have a long-term relationship, humour, positive feedback, compliments, acknowledging other persons' thoughts and opinions are the tactical tools to be put into use.

The expression of anger has different interpersonal consequences depending on the context in which it is expressed and the power of the persons who observe it. (Van Kleef, De Dreu & Manstead, 2008)

Advantages to using negative affect have been found in the research on emotional expression of anger. In face-to-face negotiations, anger was found to be every effective in extracting value where the other party perceived its options as weak. (Triandis, 1994). This result appeared because a strategic display of anger communicates toughness, and more concessions are made to an opponent perceived as tough. Therefore, where there is a power imbalance, the negotiator with better alternatives can get an even bigger share of the negotiated resources by strategically expressing anger. The same effect was found when the negotiator's negative emotion was conveyed verbally. Subjects who thought they were facing a negative negotiator made larger concessions.

Strategically, expressing negative emotions is risky business because emotions are contagious—we can give them to others. For example, a negotiator who displays hostility may breed further hostility in the other side, which can lead the negotiation to spiral out of control (Fromm, 2007).

Inappropriate displays of anger may trigger feelings of procedural injustice because they may be perceived as unethical and exploitative tactics to try to gain an unfair advantage. Such displays may trigger feelings of interactional injustice because people may feel disrespected when others express anger at them. People tend to engage in aggressive and retaliatory behaviour when they feel unfairly treated. (VanKleef & Manstead 2004)

Some studies had found that negotiators conceded to angry opponents, whereas other studies had found that negotiators retaliated against angry opponents. Negotiators concede to angry counterparts when they have low power, retaliate when they have high power and deem the expression of anger inappropriate, and remain unaffected when they have high power and deem to expression of anger appropriate. (Kleef & Manstead 2004)

The position of a negotiator is unenviable. When the strategy for the process is framed and the outcome also is more or less predefined, he is confined within these boundaries. The only flexibility he can enjoy is using the tactics to get the desired results. And this is not an easy task. The negotiator has to ally and align the path and the goals. During the progression the tactics have to be modified in accordance with the emotional display of the opponent/s which is "correct for the situation and in correct proportion to the evoking circumstances" (Shields, 2005). For example, it may so happen that his negative expressivity causes retaliation or contempt in the opponent. The negotiator will have to change the gears and might have to resort to positive expressivity.

**CONCLUSION**

"You can't shake hands with a clenched fist" (Indira Gandhi, Prime Minister of India, 1982). It depends totally on the abilities and flexibilities of the negotiator that what would be the outcome of his efforts for resolving the conflict. Participants with high levels of understanding emotions can do something strategic within the negotiation to extract maximum beneficial outcome. It depends considerably on them whether the conflict would escalate and lead to non-productive results or it would be resolved in a positive manner and lead to quality final products, thereby establishing equilibrium and eliminating stressful conditions.

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**JUDICIAL CONSUMER DISPUTES REDRESSAL AGENCIES UNDER THE CONSUMER PROTECTION ACT, 1986**

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**ABSTRACT**

*The enactment of the Consumer Protection Act, 1986, a milestone in the history of socio-economic legislation in India, has considerably consolidated the process of consumer protection and has given rise, during the past few years, to new consumer jurisprudence. The act introduced a three-tier quasi-judicial consumer disputes redressal mechanism at the district, state and national level for dispensing inexpensive and time-bound consumer justice. In this article the authors discussed about the statutory powers and jurisdiction of the three redressal agencies along with the details about the cases disposed by the redressal agencies.*

**KEYWORDS**

Redressal agencies, powers, cases filed/disposed/pending.

**INTRODUCTION**

Consumer is defined as someone who acquires goods or services for direct use or ownership rather than for resale or use in production and manufacturing. 'Consumer is sovereign' and 'customer is the king' are nothing more than myths in the present scenario particularly in the developing societies. In this regard the government, however, has a primary responsibility to protect the consumers' interests and rights through appropriate policy measures, legal structure and administrative framework. As a consumer, we would know how market products are constantly under-weight, of inferior quality and do not prescribe to quality standards specified by quality-control agencies. Consumers not only do not get value for their money but also often have to suffer losses and inconvenience due to market manipulation.

In order to safeguard consumer interest, 6 consumer rights were initially envisioned by consumer rights activists of the West, namely:

- Right to Safety
- Right to Information
- Right to Choice
- Right to be Heard
- The Right to Redress
- The right to consumer education

These rights were conceptualized in the developed world's consumer context where consumers are wealthy and completely dependent on the market to fulfill their needs. These rights had to be redefined keeping in mind the realities of a developing country like India. Consequently, two very important rights were added viz.:

- The Right to Basic Needs and
- The right to a healthy and sustained environment.

These two rights are very closely linked with the realities of developing countries where environment plays a very important role as a resource and support-structure for the people. In a country like India, a large section of the population looks for food security, assured safe water supply, shelter, education and health services. Most consumers relate very little to imported goods stacked in supermarkets or for choice among latest models of cars, as is the case in the developed world. For India's 1 billion population, food security and a safe environment are more pressing needs than any other consumer options and rights.

The Consumer Protection Act has set up three-tier quasi-judicial consumer disputes redressal machinery at the National, State and District levels, for expeditious and inexpensive settlement of consumer disputes. It is an alternative to the ordinary process of instituting actions before a civil court. These fora are mandated to provide simple, speedy and inexpensive redressal of the consumers' grievances. The three redressal agencies are as follows:

**DISTRICT FORUM**

Under the Act, the State Government shall establish a District Forum in each district of the State, though, more than one District Forum may be established in a district if it is deemed fit. Presently, there are 604 District Forums functioning in different States. The District Forums are headed by the person who is or has been or is eligible to be appointed as a District Judge. If the consumer is not satisfied with the verdict from the District Forum, he can appeal in the State Consumer Dispute Redressal Commission within a period of 30 days. If a verdict has been given against the company, it can appeal only after depositing 50% of the compensation to the consumer or Rs.25,000 whichever is less. The following table shows the cases files/disposed/pending before the District Forum.

## STATEMENT OF CASES FILED/DISPOSED/PENDING (STATE WISE) BEFORE THE DISTRICT FORUM AS ON 31.12.2010

TABLE -1

Sl. No.	Name of State	Cases filed since inception	Cases disposed of since inception	Cases Pending	% of Disposal
1	Andhra Pradesh	182042	177281	4761	97.38
2	A & N Islands	330	301	29	91.21
3	Arunachal Pradesh	310	270	40	87.10
4	Assam	13704	11976	1728	87.39
5	Bihar	78400	67714	10686	86.37
6	Chandigarh	42033	40707	1326	96.85
7	Chattisgarh	31514	29066	2448	92.23
8	Daman & Diu and DNH	153	129	24	84.31
9	Delhi	214314	202712	11602	94.59
10	Goa	6031	5449	582	90.35
11	Gujarat	158169	139250	18919	88.04
12	Haryana	198958	180898	18060	90.92
13	Himachal Pradesh	52390	49318	3072	94.14
14	Jammu & Kashmir	20792	18855	1937	90.68
15	Jharkhand	31986	29571	2415	92.45
16	Karnataka	137296	132101	5195	96.22
17	Kerala	168204	160795	7409	95.60
18	Lakshadweep	64	58	6	90.63
19	Madhya Pradesh	155236	142553	12683	91.83
20	Maharashtra	228984	210961	18023	92.13
21	Manipur	1037	1012	25	97.59
22	Meghalaya	322	308	14	95.65
23	Mizoram	2065	2011	54	97.38
24	Nagaland	246	205	41	83.33
25	Orissa	83530	78137	5393	93.54
26	Puducherry	2766	2527	239	91.36
27	Punjab	135519	130913	4606	96.60
28	Rajasthan	253945	230657	23288	90.83
29	Sikkim	252	240	12	95.24
30	Tamil Nadu	95576	89489	6087	93.63
31	Tripura	2015	1807	208	89.68
32	Uttar Pradesh	508695	426862	81833	83.91
33	Uttarakhand	32241	30599	1642	94.91
34	West Bengal	77630	72942	4688	93.96
	<b>TOTAL</b>	<b>2916749</b>	<b>2667674</b>	<b>249075</b>	<b>91.46</b>

Source: Annual Report (2010-11) of Ministry of Consumer Affairs, Food and Public Distribution

**STATE CONSUMER DISPUTES REDRESSAL COMMISSIONS**

Under the Act, a State Consumer Disputes Redressal Commission shall be set up by the State Government for the respective State. At present there are 35 State Commissions functioning in differ States. The State Commissions are headed by a person who is or has been a Judge of High Court. Under the Consumer Protection Act, 1986, the National Consumer Disputes Redressal Commission exercises administrative control over the State Commissions. If the consumer is not satisfied with the verdict from the State Consumer Disputes Redressal Commissions, he can appeal in the National Consumer Dispute Redressal Commission with in a period of 30 days. If a verdict has been given against the company, it can appeal only after depositing 50% of the compensation to the consumer or Rs.35,000 which ever is less.

**NATIONAL CONSUMER DISPUTES REDRESSAL COMMISSION (NCDRC)**

The Act empowers the Central Government to establish a National Consumers Disputes Redressal Commission. It is headed by a sitting or retired Judge of the Supreme Court of India. If the consumer is not satisfied with the verdict from the National Consumer Disputes Redressal Commissions, he can appeal in the Supreme Court with in a period of 30 days. If a verdict has been given against the company, it can appeal only after depositing 50% of the compensation to the consumer or Rs.50,000 which ever is less. The following table shows the cases filed/disposed/pending before the State/National Consumer Disputes Redressal Commission as on 31.12.2010.

## STATEMENT OF CASES FILED/DISPOSED/PENDING BEFORE THE STATE/NATIONAL CONSUMER REDRESSAL COMMISSION (STATE WISE) AS ON 31.12.2010:

TABLE - 2

Sl. No.	Name of State	Cases filed since inception	Cases disposed of since inception	Cases Pending	% of Disposal
	<b>National Commission</b>	<b>67413</b>	<b>58836</b>	<b>8577</b>	<b>87.28</b>
1	Andhra Pradesh	26026	23179	2847	89.06
2	A & N Islands	42	38	4	90.48
3	Arunachal Pradesh	56	49	7	87.50
4	Assam	2354	1475	879	62.66
5	Bihar	13915	10007	3908	71.92
6	Chandigarh	11046	10632	414	96.25
7	Chattisgarh	6608	6238	370	94.40
8	Daman & Diu and DNH	23	16	7	69.57
9	Delhi	31469	30148	1321	95.80
10	Goa	2176	2074	102	95.31
11	Gujarat	35079	30577	4502	87.17
12	Haryana	39219	28853	10366	73.57
13	Himachal Pradesh	6995	6384	611	91.27
14	Jammu & Kashmir	5884	5175	709	87.95
15	Jharkhand	4547	3657	890	80.43
16	Karnataka	37079	33918	3161	91.47
17	Kerala	23274	21952	1322	94.32
18	Lakshadweep	16	15	1	93.75
19	Madhya Pradesh	36159	31953	4206	88.37
20	Maharashtra	50103	32399	17704	64.66
21	Manipur	139	96	43	69.06
22	Meghalaya	238	152	86	63.87
23	Mizoram	177	169	8	95.48
24	Nagaland	94	64	30	68.09
25	Orissa	19820	13417	6403	67.69
26	Puducherry	899	851	48	94.66
27	Punjab	25449	19449	6000	76.42
28	Rajasthan	45309	41829	3480	92.32
29	Sikkim	35	32	3	91.43
30	Tamil Nadu	21762	19028	2734	87.44
31	Tripura	1233	1220	13	98.95
32	Uttar Pradesh	59297	28448	30849	47.98
33	Uttarakhand	4088	3285	803	80.36
34	West Bengal	14376	13613	763	94.69
	<b>TOTAL</b>	<b>524986</b>	<b>420392</b>	<b>104594</b>	<b>80.08</b>

Source: Annual Report (2010-11) of Ministry of Consumer Affairs, Food and Public Distribution

## THE STATUTORY POWERS AND JURISDICTION OF THE THREE REDRESSAL AGENCIES SUMMARIZED BELOW:

Amount of compensation you seek	Court	President	Other members
Up to 20 lakhs	District Consumer Disputes Redressal Forum	Must be qualified to be a District Judge	Two other members; one must be a woman
Rs.20 lakhs to 1 crore	State Consumer Dispute Redressal Commission	Must be a person who is or has been a Judge of a High Court	At least two other members
Higher than Rs.1 crore	National Consumer Disputes Redressal Commission	Must be a person who is or has been a Judge of Supreme Court	At least four other members

The consumer must file a complaint in a consumer court with in two years after the cause of action. The following table shows the details of the cases pending before the redressal agencies as on 31.12.2010:

Sl. No.	Name of Agency	Cases filed Since inception	Cases disposed of since inception	Cases Pending	% of total Disposal
1.	National Commission	67413	58836	8577	87.28
2.	State Commissions	524986	420392	104594	80.08
3.	District Fora	2916749	2667674	249075	91.46
	<b>Total</b>	<b>3509148</b>	<b>3146902</b>	<b>362246</b>	<b>89.68</b>

Source: Annual Report (2010-11) of Ministry of Consumer Affairs, Food and Public Distribution

#### POWERS OF THE REDRESSAL AGENCIES

The District Forum, State Commission and the National Commission are vested with the powers of a civil court under the Code of Civil Procedure while trying a suit in respect of the following matters:

- The summoning and enforcing attendance of any defendant or witness examining the witness on oath;
- The discovery and production of any document or other material producible as evidence;
- The reception of evidence on affidavits
- The requisitioning of the report of the concerned analysis or test from the appropriate laboratory or from any other relevant source;
- Issuing of any commission for the examination of any witness; and
- Any other matter which may be prescribed.

Under the Consumer Protection Rules, 1987, the District Forum, Commission and the National Commission have the power to require any person:

(i) To produce before, and allow to be examined by an officer of any authorities, such books of accounts, documents or commodities as may be required and to keep such book, documents etc. under its custody for the

Purposes of the Act;

(ii) To furnish such information which may be required for the purposes to?

any officer so specified. They have the power to:-

a) To pass written orders authorizing any officer to exercise power of entry and search of any premises where these books, papers, commodities, or documents are kept if there is any ground to believe that these may be destroyed, mutilated, altered, falsified or secreted. Such authorized officer may also seize books, papers, documents or commodities if they are required for the purposes of the Act, provided the seizure is communicated to the District Forum / State Commission / National commission within 72 hours. On examination of such documents or commodities, the agency concerned may order the retention thereof or may return it to the party concerned.

b) to issue remedial orders to the opposite party.

c) to dismiss frivolous and vexatious complaints and to order the complainant to make payment of costs, not exceeding Rupees ten thousand to the opposite party.

#### CONCLUSION

The consumer courts are milestone in the socio-economic legislation. The Consumer Protection Act, 1986 was enacted to give a speedy, simple and cost effective remedy for consumer grievances. The effective implementation of the Act is affected by lack of awareness among consumers, the rampant practice of sales taking place without bills either by ignorance of consumer or by the practice of seller. Further the district forums are always functioning with shortage of judicial officers and staff. Spreading awareness among consumers especially among consumers in rural areas is the biggest challenge. In spite of the enactment made in the year 1986 still it is a long way in implementation of the Act through the various forums. The government should take steps to remove the deficiencies as discussed above and also rope in NGOs for creating awareness among consumers and empowering them instead of simply assisting them to file cases.

#### REFERENCES

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3. Commentary on Consumer Protection Act, 1986
4. Consumer Behaviour and Consumer Protection in India, Agrawal Meemu
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6. Legal Service India.com

## VIRTUALIZATION- UNLOCKING HIDDEN CLOUD CAPABILITIES

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### ABSTRACT

*Virtualization is quickly becoming a vital technology across all parts of the IT environments since last couple of years. Virtualization is now in use across nearly all enterprises, and future plans to move some applications to Cloud Computing, because cloud computing will just compound the problems of virtualization or we can say both technologies are catalyzing each other. The similarities in both strategies are like both helps to reduce the size and control the expansion of data center to reduce the cost of hardware, power and cooling, space, management and disaster recovery but their initial and ongoing costs are differ. This paper aims at addressing some of these doubts about the need for virtualization in a cloud computing context. Our study concentrates on, if virtualization really helps to make the cloud better or both the technologies are making the work of IT industries complex. This paper also focuses on the benefits of using virtualization with cloud computing and its growth rate in the market.*

### KEYWORDS

Virtualization, Cloud Computing, Data Center.

### INTRODUCTION

Many organizations have found themselves drawn towards virtualization and Cloud Computing architectures for their many benefits. Cloud and Virtualization are the hottest topics of IT Industries now a days. Virtualization is a key enabling technology for cloud computing environments. Cloud computing is inclusive of virtualization and a way to implement it. However cloud can be implemented without virtualization as well. Cloud and Virtualization both help deliver optimized resources, on-demand utilization, flexibility and scalability. The concept of cloud computing has captured the concentration and imagination of organizations of all sizes because its service delivery model converts the power of virtualization into measurable business value. Cloud was implemented more of an outsourced/hosted model first and then slowly being adopted within the enterprise firewall as an architecture. Virtualization on the other hand was started within the boundaries of enterprise firewall and then was utilized in hosted environments. Even if there are differences and similarities...many in the industry use them interchangeably.

Virtualization technologies partition hardware and thus provide flexible and scalable computing platforms. Virtual machine techniques (such as VMware, and Xen), offer virtualized IT-infrastructures on demand. Virtual network advances, (such as VPN), support users with a customized network environment to access Cloud resources. Virtualization techniques are the bases of the Cloud computing since they render flexible and scalable hardware services.

Virtualization allows the pooling of the computational power and storage of multiple computers, which can then be shared by multiple users. For example, under the cloud computing paradigm, businesses can lease computer resources from a data center to operate Web sites and interact with customers -- without having to pay for the overhead of buying and maintaining their own IT infrastructures. The virtualization manager, commonly referred to as a "hypervisor," is a type of software that creates "virtual machines" that operate in isolation from one another on a common computer. In other words, the hypervisor allows different operating systems to run in isolation from one another -- even though each of these systems is using computing power and storage capability on the same computer. This is the technique that enables concepts like cloud computing to function.



### DEFINITION OF CLOUD COMPUTING

"Cloud computing" is a style of computing where massively scalable IT-related capabilities are provided "as a service" using Internet technologies to multiple external customers. Users move out their data and applications to the remote "Cloud" and then access them in a simple and pervasive way. "Cloud computing" builds upon decades of research in virtualization, distributed computing, "grid computing", utility computing, and, more recently, networking, web and software services [28]. It implies a service oriented architecture, reduced information technology overhead for the end-user, greater flexibility, reduced total cost of ownership, on demand services and many other things.

### FUNCTIONAL ASPECTS OF CLOUD COMPUTING

- **Hardware as a Service (HaaS)**

Hardware as a Service was coined possibly in 2006. As the result of rapid advances in hardware virtualization, IT automation and usage metering & pricing, users could buy IT hardware, or even an entire data center, as a pay-as-you-go subscription service. The HaaS is flexible, scalable and manageable to meet your needs. Examples could be found at Amazon EC2, IBM's Blue Cloud project, Nimbus, Eucalyptus and Enomalism.

• **Software as a Service (SaaS)**

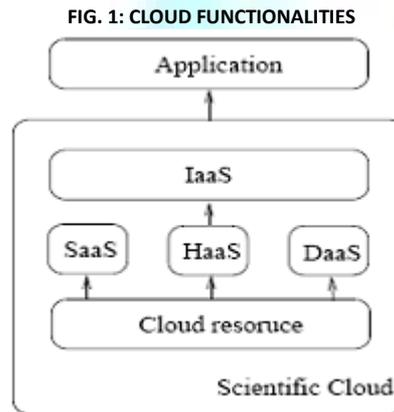
Software or an application is hosted as a service and provided to customers across the Internet. This mode eliminates the need to install and run the application on the customer’s local computers. SaaS therefore alleviates the customer’s burden of software maintenance, and reduces the expense of software purchases by on-demand pricing. An early example of the SaaS is the Application Service Provider (ASP). The ASP approach provides subscriptions to software that is hosted or delivered over the Internet. Microsoft’s “Software + Service” shows another example: a combination of local software and Internet services interacting with one another. Google’s Chrome browser gives an interesting SaaS scenario: a new desktop could be offered, through which applications can be delivered (either locally or remotely) in addition to the traditional Web browsing experience.

• **Data as a Service (DaaS)**

Data in various formats and from multiple sources could be accessed via services by users on the network. Users could, for example, manipulate the remote data just like operate on a local disk or access the data in a semantic way in the Internet. Amazon Simple Storage Service (S3) provides a simple Web services interface that can be used to store and retrieve, declared by Amazon, any amount of data, at any time, from anywhere on the Web. The DaaS could also be found at some popular IT services, e.g., Google Docs and Adobe Buzzword. ElasticDrive is a distributed remote storage application which allows users to mount a remote storage resource such as Amazon S3 as a local storage device.

• **Infrastructure as a Service (IaaS)**

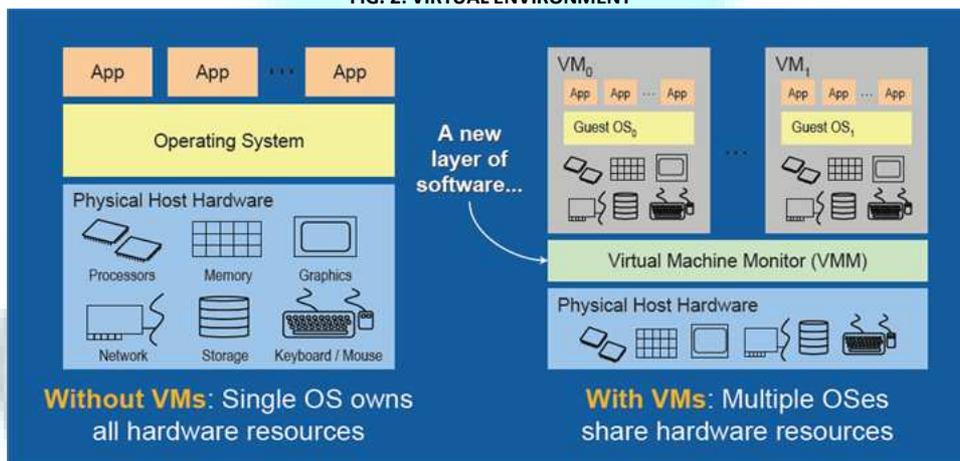
Infrastructure as a Service is a provision model in which an organization outsources the equipment used to support operations, including storage, hardware, servers and networking components. The service provider owns the equipment and is responsible for housing, running and maintaining it. The client typically pays on a per-use basis.



**DEFINITION OF VIRTUALIZATION**

Virtualization is another very useful concept. It allows abstraction and isolation of lower level functionalities and underlying hardware. This enables portability of higher level functions and sharing and/or aggregation of the physical resources. Virtualization is the creation of a virtual (rather than actual) version of something, such as an operating system, a server, a storage device or network resources. The most common case is to provide customers or users with what appears to be their own system on which they have full root access and control of all services, but without the overhead of maintaining an actual physical machine. A single physical machine can host multiple virtual systems, each of which is granted a slice of its memory, disk space and CPU time. Each virtual system is protected from others on the same host system. Because many applications or customers do not require the full CPU, RAM or disk capacity of a real system, virtualization can be used to safely host several on a single physical system, thus saving resources.

**FIG. 2: VIRTUAL ENVIRONMENT**



<http://connect.in.com/server-virtualization/images-2.html>

**TYPES OF VIRTUALIZATION**

• **Application Virtualization**

Application virtualization is an umbrella term that describes software technologies that improve portability, manageability and compatibility of applications by encapsulating them from the underlying operating system on which they are executed. A fully virtualized application is not installed in the traditional sense, although it is still executed as if it were. The application is fooled at runtime into believing that it is directly interfacing with the original operating system and all the resources managed by it, when in reality it is not. In this context, the term "virtualization" refers to the artifact being encapsulated (application), which is quite different to its meaning in hardware virtualization, where it refers to the artifact being abstracted (physical hardware).

• **Storage Virtualization**

Virtualization is the pooling of physical storage from multiple network storage devices into what appears to be a single storage device that is managed from a central console. Storage virtualization is commonly used in a storage area network (SAN). The management of storage devices can be tedious and time-consuming. Storage virtualization helps the storage administrator perform the tasks of backup, archiving, and recovery more easily, and in less time, by disguising the actual complexity of the SAN.

- **Hardware Virtualization**

This is the most common and is used in IT departments in a company as well as in the data centers. The server's hardware is virtualized thus allowing us to be able to run different OS and different applications simultaneously on the same hardware. This allows us to do server consolidation.

- **Desktop Virtualization**

Desktop virtualization (sometimes called client virtualization), as a concept, separates a personal computer desktop environment from a physical machine using the client-server model of computing.

Virtual desktop infrastructure, sometimes referred to as virtual desktop interface (VDI) is the server computing model enabling desktop virtualization, encompassing the hardware and software systems required to support the virtualized environment.

- **Server Virtualization**

Server virtualization technology makes a single physical server act as many, enabling the use of software in environments separate from the hardware. It allows an organization to get the most out of its hardware, and it provides the flexibility to add and remove virtual servers as needed. Server virtualization technology can be deployed at different levels, including the machine and operating system (OS) levels.

## A PERFECT PAIR

Cloud computing is following a similar path as virtualization has over the past several years. Both virtualization and cloud computing saw a spectacular increase in planned tools from 2009 to 2010, with a 15% jump for virtualization management and an enormous 20% jump for the cloud. We've known since 2008 that virtualization and cloud computing were the next wave of technological changes for IT operations [18].

Some say that "cloud computing is virtualization taken to its logical conclusion", but is that really the case? Actually it is cloud who gives a new look to the concept of virtualization. It seems that VMware has taken the growth with the cloud hype. Whether or not you think that virtualization paved the way for the cloud, or that the cloud is just a natural range for virtualization, we think that the two technologies make a perfect match. Efficient real-time monitoring and reporting for virtual environments becomes even more important with the on-demand and self-service nature of the cloud. Some persons say that both the technologies are very complex and confusing but it is also true that without them, IT would not be able to move as fast as it is today.

Most of the companies are turning to virtualization and cloud computing technologies to manage their IT infrastructure. Because of that there is an increased need for effective and integrated network monitoring. IT network management will need to adapt and scale for more distributed networks, and avoid "virtual stall".

Virtual stall" is a fairly new phenomenon and, to some, an unfamiliar phrase. To fully understand it, we must first consider the recent history of the modern data centre. Virtualization entered the data centre in a different way than most technologies. Its rapid adoption was driven by the ROI of server consolidation, the flexibility it brings to IT organizations, and in some cases, as a top-down initiative aimed at decreasing the ongoing footprint of the data centre. Virtual stall can occur when enterprise IT is not ready for the rapid growth associated with virtualizing data centers and introducing the cloud. Scalability, management, process and coordination issues are all key factors of virtual stall, mostly due to a lack of automation and reporting in virtualization management tools.

Smaller and more flexible companies haven't experienced VM stall, yet (although they will eventually), and the very large and process-mature organizations generally implemented virtualization initiatives in a more controlled and integrated manner, so they are seeing less VM stall. The firms in between these two extremes, however, need to be concerned about stall.

## WHY VIRTUALIZATION WITH CLOUD COMPUTING

Virtualization has three characteristics that make it ideal for cloud computing [30]:

**Partitioning:** In virtualization, you can use partitioning to support many applications and operating systems (OSes) in a single physical system.

**Isolation:** Because each virtual machine is isolated, each machine is protected from crashes and viruses in the other machines.

What makes virtualization so important for the cloud is that it decouples the software from the hardware.

**Encapsulation:** Encapsulation can protect each application so that it doesn't interfere with other applications. Using encapsulation, a virtual machine can be represented (and even stored) as a single file, making it easy to identify and present to other applications.

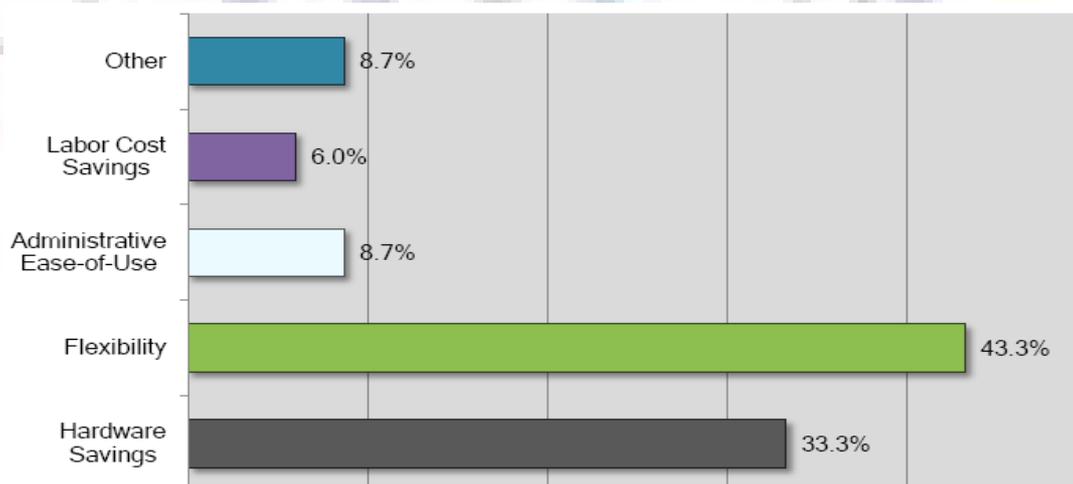
To understand how virtualization helps with cloud computing, you must understand its many forms. In essence, in all cases, a resource actually emulates or imitates another resource. Here are some examples:

- **Virtual memory:** Disks have a lot more space than memory. PCs can use virtual memory to borrow extra memory from the hard disk. Although virtual disks are slower than real memory, if managed right, the substitution works surprisingly well.
- **Software:** There is virtualization software available that can emulate an entire computer, which means 1 computer can perform as though it were actually 20 computers. Using this kind of software you might be able to move from a data center with thousands of servers to one that supports as few as a couple of hundred.

To manage the various aspects of virtualization in cloud computing most companies use hypervisors. Because in cloud computing you need to support many different operating environments, the hypervisor becomes an ideal delivery mechanism by allowing you to show the same application on lots of different systems. Because hypervisors can load multiple operating systems, they are a very practical way of getting things virtualized quickly and efficiently.

According to a survey by Zenoss [13]:

FIG. 3 REASON ENTERPRISE USERS CHOOSE TO USE VIRTUALIZATION



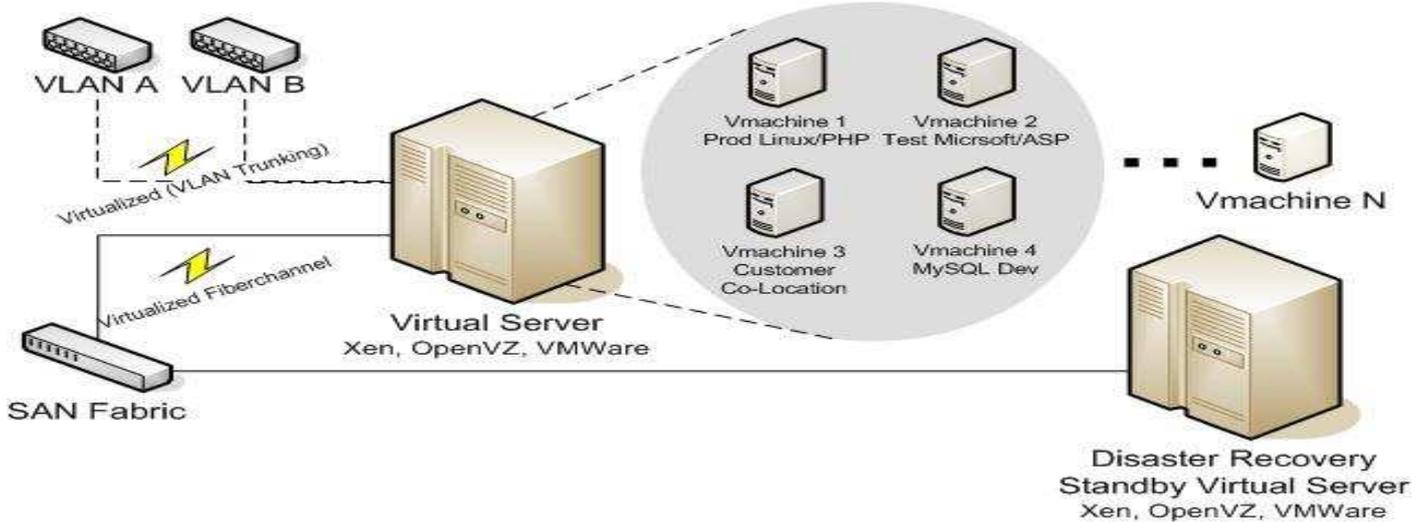
www.zenoss.com/in/virtualization\_survey.html apr 13, 2011

## EMERGENCE OF A NEW MODEL

Today, most of the IT organisations looking forward with their virtualization initiatives towards the cloud for reducing provisioning cost and strengthening their operations. Some companies started to review their applications, they've realized that many of their applications could easily run in the cloud. So what's the delay in going "P2V" (physical to virtual)? In many cases it crept into organizations, led by developers and technology analysts who recognized the efficiency and cost advantages of virtualization and simply started using it. While many enterprise customers have started expanding their virtual footprints it can be a long and complex process.

Although technically it's quite easy to virtualize an application, using a number of well-known P2V tools such as VMWare Converter from VMware or Platespin (now owned by Novell), the harder part of the process is often agreeing which applications to virtualize and understanding the inter-dependencies between these apps and other data center services.

FIG.4 VIRTUALIZED ARCHITECTURE



Source: [http://docs.google.com/viewer?a=v&q=cache:6txmDzFVK8wJ:ciocouncil.iowa.gov/2006\\_docs/Virtualization.ppt+virtualization+assessment&hl=en&gl=in&pid=bl&srcid=ADGEEESgEfXTreg9a95kzEMQsqqCQeSGk6WlJ3gn8pWDg8iwNrY6CFpbTOQT1iySN1Mz6IGEN3wv7oqLkXmtOZJJ8mJy6iD-naT22y9IEvo4aEYfBPfWbWYbfqUzKf9q6QuQ2adWcwMW&sig=AHIEtbRWAajRBvEHml39YHEQy3tr748Qw](http://docs.google.com/viewer?a=v&q=cache:6txmDzFVK8wJ:ciocouncil.iowa.gov/2006_docs/Virtualization.ppt+virtualization+assessment&hl=en&gl=in&pid=bl&srcid=ADGEEESgEfXTreg9a95kzEMQsqqCQeSGk6WlJ3gn8pWDg8iwNrY6CFpbTOQT1iySN1Mz6IGEN3wv7oqLkXmtOZJJ8mJy6iD-naT22y9IEvo4aEYfBPfWbWYbfqUzKf9q6QuQ2adWcwMW&sig=AHIEtbRWAajRBvEHml39YHEQy3tr748Qw)

As corporate IT has slowly adopted virtualization as a strategic imperative, the cloud has come along with paradigm-changing flexibility and elasticity. We're now seeing enterprise customers and prospects ask what they can do with applications that aren't yet virtualized and are still sitting on dedicated servers, recognizing that the cloud is likely to be their ultimate home. Thus we're seeing the emergence of a new model — "P2C" (physical to cloud), with virtualization in the data center becoming a stepping stone to the ultimate destination of the cloud.

## STILL VIRTUALIZATION IS GROWING

Although, virtualization is a very old technology, but till now it is very new. Most organizations have adopted virtualization in some way, but are only about 20%-40% virtualized so far. So there's plenty of room left to penetrate, and there's still lots of opportunity for optimization and better management.

The pace of adoption of virtualized servers is incredibly rapid among organizations that are using virtualization, with 35% of servers purchased in 2007 being virtualized and 52% of those bought in 2008 expected to be so. 54% of those not using virtualization expect to do so in the next 18 months. Growth of virtualization as a strategy remains strong, rising from 46% of the base to 54%.

The common wisdom shared by many vendors, analysts, and customers is that "hybrid" environments are key to the emerging IT infrastructure. Some applications will stay behind the firewall and others can be moved to outside cloud environments. Some may need to be split between the data center and external clouds, especially where the database needs to stay inside. In this hybrid world, some enterprises will want to focus on growing the internal virtualization path and starting to build capabilities for provisioning, charge-back, orchestration, role-based access, etc.

## BAISED TOWARDS KNOWN TECHNOLOGIES

It is a fact that many enterprise users (as well as some IT departments) have a bias nature towards focusing the cloud revolution on known and existing technologies. It's still a bit difficult to think about moving things outside the data center, and cloud technologies are still in relatively early stages [27]. And external cloud services (in particular public clouds) are pushing the envelope in terms of customer expectations and placing new, challenging demands on virtualization.

But virtualization will have to step up to these demands now that the cloud revolution has raised the bar. Many of the emerging capabilities will need to be at the management plane: a broad range of self-service functions, for sure, but also the ability to route workloads to the appropriate environments based on business and technical requirements, and to federate across multiple and diverse environments both on-premises and externally. The public cloud providers and cloud-enablers vendors are leading the way in these areas. So maybe cloud computing turns out to be not only the logical extension of virtualization, but the catalyst that helps virtualization move to the next level.

## MYTHS ABOUT CLOUD COMPUTING AND VIRTUALIZATION

Despite of knowing the benefits of cloud and virtualization, the enterprise users have a lot of myths about both of the technologies [10]. So, in this section we are discussing the general myths about both of the technologies.

### LOW COST IS THE CLOUD'S CHIEF ATTRACTION

Low cost is a definite advantage of the cloud, but for many organizations, agility, scalability, time-to-market, and fast access to high-quality infrastructure present more compelling benefits.

### THE CLOUD IS ALWAYS LESS EXPENSIVE

That depends on several factors: network and bandwidth requirements, special hardware needs, the cloud service and application that are being considered, and, of course, what you're comparing the cloud to on the other side.

**DEPLOYING CLOUD APPLICATIONS IS A SNAP**

Most IT organizations will find there's work involved in configuring, deploying, integrating, and managing cloud-based applications. With the right knowledge and tools and the use of best practices, deploying and scaling applications that meet your organization's requirements can be relatively painless.

**CLOUD COMPUTING IS FOR SMBs, NOT ENTERPRISES**

Larger companies are using the cloud for a variety of applications ranging from highly scalable brand websites to social applications, grid computing for scientific research, media processing, employee collaboration, and a number of other web-based business and consumer services.

**THE CLOUD MEANS THERE'S NO ROLE LEFT FOR IT**

The cloud in turn can help make IT much more agile and responsive in delivering the applications and capabilities its internal customers require. With fewer IT resources required for the nuts and bolts of infrastructure, IT has more time to spend on the strategic aspect of its role: delivering business value to the organization.

**I'LL GET LOCKED IN**

This depends on the service you choose. Start by asking the question: What if I need to move? Make sure your contract includes detailed provisions for a fast, smooth exit. Deploy portable cloud configurations that can be migrated quickly from one provider to another. And take advantage of deployment tools that enable quick migration and configuration.

**MY DATA WON'T BE SECURE IN THE CLOUD**

Public cloud provider security is often better than that of even most large enterprise data centers. Customers should examine contracts and SLAs carefully to ensure that they meet their organizations' data location, control, and security requirements. Sensitive data should be encrypted in transit and at rest.

**I WON'T HAVE FULL OWNERSHIP OF MY CLOUD-BASED DATA**

You can have full data ownership if you choose your cloud provider carefully and pay attention to contract terms. Data ownership is sometimes an issue with consumer social networking sites, but it is much less likely to be an issue with an infrastructure provider.

**CLOUD APPLICATION PERFORMANCE IS HAMPERED BY NETWORK LATENCY AND I/O BOTTLENECKS**

Both can be issues, but the degree to which they affect performance depends on your cloud providers, network providers, applications, and cloud deployment architecture. A carefully architected deployment can often avoid these issues.

**MY DATA CENTER IS VIRTUALIZED SO I ALREADY HAVE THE CLOUD**

Virtualization is a key component of the cloud, but cloud computing is about much more than virtualization. The ability to deploy and scale infrastructure rapidly and programmatically, on-demand, on a pay-as-you-go basis - that's what really defines the cloud and what is difficult if not impossible to achieve using traditional virtualization alone.

**VIRTUALIZATION EMERGING AT LIGHT SPEED (STATS)**

According to a survey, only about 16% of x86 workloads are running in virtual machines, with an estimated half of all installed workloads to run in virtual machines by YE2012[20]. Perhaps not so surprisingly, the engine of growth for virtualization is switching from large enterprises to small business. Large enterprises started sooner and are perhaps 25% virtualized today.

Virtual Machines: % of installed x86 workloads running in a vm

- 12% 2008
- 29% 2009
- 48% 2012

**Market Share – Virtual Machine installed base and growth projections**

- VMware owned 89% of 5.8 million installed virtual machines in 2008
- Microsoft had 8% of the installed market (Virtual Server more than Hyper-V installations)
- Citrix had only 2%

By 2012, the installed base of virtual machines is projected to reach 58 million with market share as follows: VMware 65%, Microsoft 27%, Citrix 6%.

**AUDIENCE POLLS****What is the primary vm solution you are using for x86 servers now?**

- Citrix 3%
- Microsoft 7%
- Novell 0%
- Oracle 1%
- Red Hat 1%
- VMware 85%
- Other 3%

*What will be your primary virtual machine solution by 2012? (i.e., how many of you are going to leave VMware and for what other solution)*

- Citrix 5%
- Microsoft 21%
- Novell 0%
- Oracle 3%
- Red Hat 5%
- VMware 65%
- Other 1%

So Virtualization has a smaller growth rate till now but don't feel bad for that since it is supposed to get 10x bigger upto 2014.

**WE'RE NOT DONE YET**

According to experts, when virtualization technology first emerges, many business managers viewed it with suspicion. They saw the removal of the physical servers on which key applications ran as worrisome. This has changed over time, as many have recognized the operational and financial benefits of virtualization. But virtualization is one step toward a larger goal, not the end of the journey. IT is in the middle of a fundamental transition from the rigid, siloed world of traditional data centers toward a more elastic, responsive model where needs are met far faster and more efficiently. And we're not done yet. While virtualization helps companies reduce cost and improve agility, the full promise of the new model plays out with the addition of cloud computing, delivering infrastructure on demand as an easily-accessible, cost-effective service.

The new model will allow companies to get out of the computing infrastructure business where appropriate, retaining only the portion that is essential to the enterprise. As the cloud environment becomes increasingly agile and secure, provisioning decisions will be framed by asking: Should we be really be doing this ourselves, or can someone else do it better and at lower cost?

Virtualization can make IT more responsive to the needs of business. Without spending lots of weeks to provision a physical server a virtual server can be stalled in few minutes. While virtualization brings much needed flexibility and efficiency but virtualization alone cannot solve several problems of IT industries. The

reason behind that is IT companies still have huge data infrastructure to maintain. The real improvement comes when virtualization combined with the cloud capabilities. While virtualization is a key step toward moving beyond the rigid data center, cloud computing takes you all the way there - which is why it's getting so much attention.

## CONCLUSION

"Cloud" computing stands on decades of research in virtualization, distributed computing, utility computing, and, more recently, networking, web and software services. It implies a service-oriented architecture, reduced information technology overhead for the end-user, great flexibility, reduced total cost of ownership, ondemand services and many other things. This paper discusses the concept of "cloud" computing with the virtualization technology. Recent cloud solutions are heavily based on core Virtualization technologies e.g. VM provisioning, VM Migration etc. Virtual environments and cloud computing both cut data center budgets by reducing the number of servers required, power and cooling costs, floor space requirements, management overhead, and disaster recovery expenses. The vision and potential of cloud-based virtualization is very real. So, the innovation will continue and there will be massive value created for customers over the next two to three years. However, both the technologies are emerging one that's why the speed of adoption is slow. According to a survey, 23% of installed applications are running in a VM now. 48% of installed applications will run on a VM by 2012.

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**THE APPLICATION OF REVISED BLOOM'S TAXONOMY FOR JAVA PROGRAMMING ASSESSMENT**

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**ABSTRACT**

*Learning of Java programming is a challenge for undergraduate students, particularly with application and analysis levels. A study has been conducted in this regard to analyse the learning difficulties of Java programming in six cognitive levels of Revised Bloom's Taxonomy (RBT); Remember, Understand, Apply, analyse, evaluate and create. Multiple Choice Questions (MCQs) have been constructed according to RBT from the subject of programming paradigm of undergraduate Computer Science and Engineering (CSE), affiliated colleges of Anna University, Chennai. 220 responses were received from four engineering colleges. We analyzed the answers provided by the students. The results show that the higher order skills (analyse level) is harder than the lower order skills (Remember, understand and apply) of Revised Bloom's taxonomy. Further, students feel that the concurrent programming (init-v) of Java is more difficult to learn when compare to the Object Oriented Programming (OOP) -fundamentals (unit-I), OOP-Inheritance (unit-II), Event driven Programming (unit-III) and generic programming (unit-IV).*

**KEYWORDS**

Assessment, Java Programming, Revised Bloom's Taxonomy.

**INTRODUCTION**

Bloom's taxonomy was first described as a hierarchical model for the cognitive domain (Bloom et al, 1956). Anderson and others revised the major categories in Bloom's Taxonomy to suit the emerging educational institutional needs of the new century (Anderson et al, 2001). The revised Bloom's Taxonomy maintained the original ideas of Bloom, being the levels of cognition, but made changes within the categories, expanding them and explaining them better in the context of general education. In our study, we use the Revised Bloom's Taxonomy as we are classifying programming ability and find that it is capable of explaining the ability or skills required by students to answer each multiple-choice question (MCQ). The six thinking levels in revised version of Taxonomy is *Remember, Understand, Apply, Analyse, Evaluate and Create* Bloom's taxonomy has been applied to the education domain of computer science for course design and evaluation (Scott 2003), structuring assessments (Lister et al, 2003) and comparing the cognitive difficulty level of computer science courses (Oliver et al, 2004). Assessment of learning outcomes for Java programming course can be improved effectively through proper application of taxonomy. This study aims at applying the Revised Bloom's Taxonomy for Java programming assessment and find out the deficiency of students learning on various levels of taxonomy and unit wise as well.

**RELATED WORK**

Applying the taxonomy in summative assessment is a difficult task (Thompson et al, 2008). A number of studies have applied Bloom's Taxonomy to programming tasks. Scott explained some links between programming questions and Bloom's Taxonomy when he demonstrated how the taxonomy works in programming tests and provided some sample questions for each category of the taxonomy (Scott, 2003). Oliver and others claimed that their Programming 1 course rated as 3.9 applying Bloom's Taxonomy, but, in their analysis, only assignments were rated according to the Bloom's Taxonomy (Oliver et al.2004). There was no evaluation made of examination questions based on Bloom's Taxonomy as due to the course designed, there is no final examination for Programming.

Lister & Leaney identified the weak, middle and strong programming students in their study based on criterion-referenced grading (grades which were assigned according to criteria, irrespective of the resultant grade distribution). Different treatments, depending on the level within the taxonomy, were applied in order to obtain the various different grades. They proposed a scale based on the students' performances to determine their progression to the semester. Furthermore, the study concluded that multiple-choice questions should not be seen as being too easy in the exam, since one third to one half of the class failed to achieve the 70% pass figure on their first attempt. However, they still believe that multiple-choice questions can provide a solid test of a student's knowledge and comprehension (Lister & Leaney 2003).

Nurul Naslia Khairuddin and others outline software engineering assessment using Bloom's Taxonomy, sample multiple choice questions are given and categorized according to the relevant Bloom's Taxonomy levels (Nurul Naslia Khairuddin et al, 2008). Shusaida shuhidan and others found that it is very difficult to classify questions on the final exam paper using Bloom's Taxonomy It is hard to distinguish between the categories as the original Bloom's Taxonomy was written to suit the education field generally (Shusaida shuhidan et al, 2009). Further they recommended the two additional measures as we have seen that there exist questions which are low level in complexity as determined by the instructors, but the novices found them very difficult to solve. In a study, Satu Alaoutinen and Kari Smdander shows that the scale using Revised Bloom's Taxonomy for students self assessment in a programming course gives a quite good general picture of students knowledge level (Satu Alaoutinen et al, 2010).

**METHODOLOGY**

Our data source is the answer to questions on the subject 'Programming Paradigm' of undergraduate students of CSE branch in affiliated colleges of Anna University, Chennai. Tool consist a total of 80 marks for 80 questions, all of which are MCQs. The time allocated to complete the paper was 3 hours plus an extra 15 minutes of reading time. On this basis the expected, estimated time to answer each multiple choice questions is approximately three to four minutes. In total there were 220 submissions received from the students. We analyzed the answers of the 80 questions. In each multiple-choice question there is only one correct answer and three incorrect answers, denoted as distracters. In the remainder of this section we present descriptions of our approaches to construct test questions according to Revised Bloom's Taxonomy.

**METHODOLOGY FOR MCQ CONSTRUCTION**

We outline the Revised Bloom’s Taxonomy upon which we have based our categorization of the multiple-choice questions (Table 1). In terms of cognitive complexity, Remembering is the lowest level category and relates to memorizing information and being able to recall definitions. As the scale of complexity moves up, the cognitive factor increases, meaning that greater use is being made of the students’ mental capabilities. Creating is the highest level of cognition and relates to the creating, developing and writing of ideas and abstractions. The Applying level 3 is the one where we believe most of the programming code questions from our test paper have been pitched.

**TABLE 1: REVISED BLOOM’S TAXONOMY**

Skill	Sample prompts	Purpose	Level
Remembering	<i>recognize, list, describe, identify, retrieve, name</i>	memorize and recall facts	LOWER
Understanding	<i>describe, explain, estimate, predict</i>	understand and interpret meaning	
Applying	<i>implement, carry out, use, apply, show, solve</i>	apply knowledge to new situations	
Analyzing	<i>compare, organize, cite differences, deconstruct</i>	break down or examine information	HIGHER
Evaluating	<i>check, critique, judge hypotheses, conclude, explain</i>	judge or decide according to a set of criteria	
Creating	<i>design, construct, plan, produce</i>	combine elements into a new pattern or product	

We discussed primarily the construction of 80 multiple choice questions, by applying Revised Bloom’s Taxonomy for given five units and analyse this with students’ level of learning difficulty of Java Programming.

**METHODOLOGY FOR APPLICATION OF REVISED BLOOM’S TAXONOMY TO MCQ**

We examined the Multiple Choice Questions and distracters, constructed them according to Revised Bloom’s Taxonomy outlined in the previous section, and present these results in Table 2. We delimit that the content of the multiple-choice questions may be constructed into three lower levels of Revised Bloom’s Taxonomy: Remember, Understand, Apply and one Higher level of Revised Bloom’s Taxonomy: Analyse. Since this is an undergraduate programming course, we would expect that the test instrument should test performance at the lower level skills. The questions are equally taken for all the five units of the subject and four Taxonomy levels. 20 questions from each level (20x4=80 questions).

The construction of MCQ to various cognitive levels is done based on cognitive-level-keyword mapping (Renumol V G, 2001). Revised Bloom’s Taxonomy in cognitive domain provides a set of keywords for each cognitive level. Remember the syntax, package are comes under *Remember* level. Ability to understand the concept, flow of execution, interprets the given code for *Understand* level. Ability to use the syntax, concepts in unfamiliar situation comes for *Apply* level. Checking the ability of logical thinking comes under *Analyse* level.

**TABLE 2: REVISED BLOOM’S TAXONOMY AND THE NUMBER OF MCQ IN EACH LEVEL**

Level	Category	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V	Total no. of question on each level
6	Create	-	-	-	-	-	-
5	Evaluate	-	-	-	-	-	-
4	Analyse	4	4	4	4	4	20
3	Apply	4	4	4	4	4	20
2	Understand	4	4	4	4	4	20
1	Remember	4	4	4	4	4	20
<b>Total no. of questions on each unit</b>		16	16	16	16	16	80

**STUDENTS’ LEVEL OF DIFFICULTY**

In the test paper construction, it is considered that the level of difficulty faced by the students. According to the nature of multiple-choice questions, they have four possible responses (A, B, C or D), only one correct answer and three distracters. Constructed MCQ in two levels, one is easy which consist of vary easy and easy, another one is difficult which consist of difficult and very difficult.

**ANALYSIS AND DISCUSSION**

The Percentage of marks secured by students in Programming paradigm subject on unit wise and the level of Revised Bloom’s Taxonomy is presented in bar chart in Fig.1.

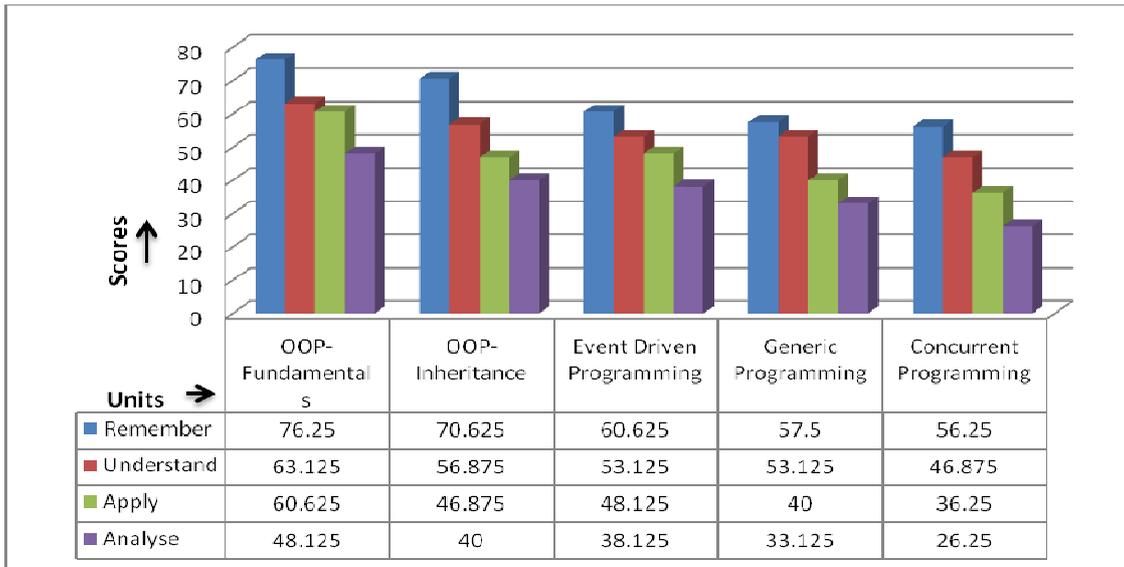
*The least performance of students is:*

- Analyzing the concurrent programming (26.25%)
- Analyzing the generic programming (33.13%)
- Applying the concurrent programming (36.25%)

*The highest performance of students is:*

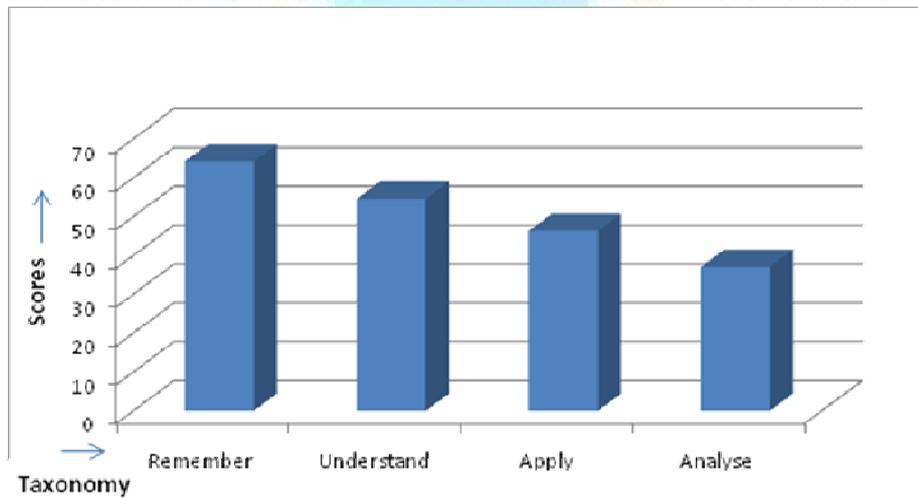
- Remembering the OOP-Fundamentals (76.25%)
- Remembering the OOP-Inheritance (70.63%)
- Understanding the OOP-fundamentals (63.13%)

FIG.1: PERFORMANCE OF STUDENTS ON TEST OF JAVA PROGRAMMING: TAXONOMY AND UNIT WISE



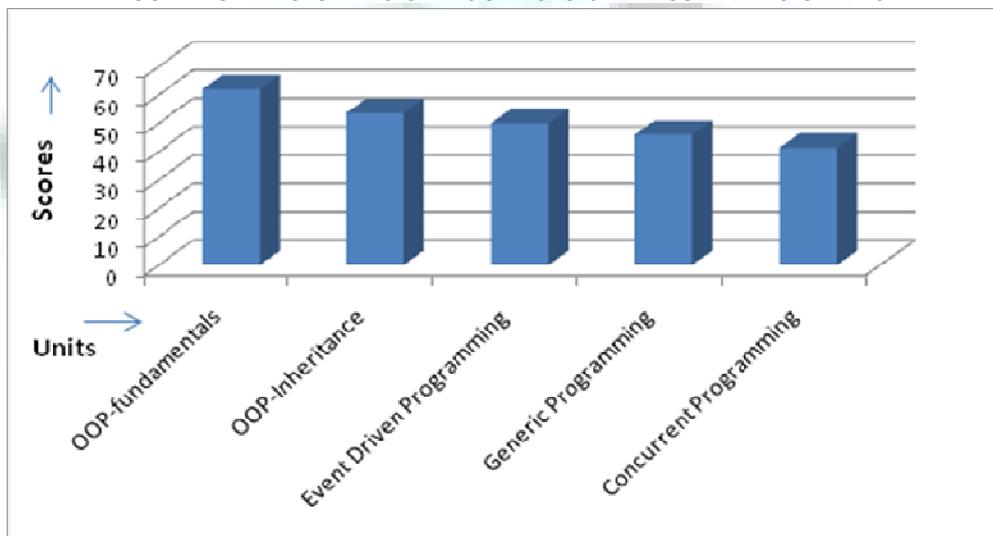
The performance of students in programming paradigm subject according to Revised Bloom’s Taxonomy is shown in fig.2. The students’ performance is decrease when moving to the next level of taxonomy, which indicates the emerging need of concentration on teaching and learning of programming paradigm subject.

FIG.2: PERFORMANCE OF THE STUDENTS ON TEST OF JAVA PROGRAMMING: TAXONOMY WISE



Unit wise performance of students in learning of Java programming has shown in Fig.3. Subsequence of students’ performance on taxonomy wise, here Students’ performance is decrease when moving to the next unit of the subject. This point out to give attention on teaching and learning process of Java programming.

FIG.3: PERFORMANCE OF THE STUDENTS ON TEST OF JAVA PROGRAMMING: UNIT WISE



The analysis of various data revealed that the students have the lack in all four levels of Revised Bloom's Taxonomy. Primarily with the analyse level of Revised Bloom's Taxonomy is difficult for learning of Java programming. Also, the concurrent programming is considered difficult unit to learn.

## CONCLUSION

In order to apply the Revised Bloom's Taxonomy and to analyse the learning difficulties of Java Programming, this paper analyzed the answers of MCQ from a group of undergraduate engineering students. This study shows that the students have difficulties on all levels (taken only first four; Remember, understand, apply, analyse) of Revised Bloom's Taxonomy, particularly in the applying and analyzing level, also it reports that the concurrent programming (unit-v) is difficult unit compare to other units. Further, it shows the analyse level of concurrent programming is most difficult of Programming paradigm subject.

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## A STUDY ON THE EFFECTS OF MERGER & ACQUISITIONS IN THE INDIAN BANKING INDUSTRY

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### ABSTRACT

*World over mergers and acquisitions have been happening at a furious pace. The various motivations such as synergies and access to new markets that can be achieved faster through merger and acquisitions than through normal expansions is what is accelerating the drive to adopt this strategy. There are numerous benefits associated with mergers and acquisitions and the financial and strategic management perspective is to be analyzed from several bases. Therefore the banking industry structure, the evaluation of financial implications before and after mergers and the change in share prices after the strategic announcement are studied in this paper. Event study techniques such as CAR and t-test have been used to study the effect of mergers and acquisition along with EVA and Ratio Analysis to understand the financial implications before and after the event. The idea that mergers and acquisitions produce synergies over a long run is supported by the study however it alone cannot ensure that the organisation remains profitable.*

### KEYWORDS

Banking industry, CAR, Economies of scale and scope, EVA, Merger and acquisition, Ratio Analysis, t-test

### INTRODUCTION

Many countries have deregulated the financial industry to accelerate cross border economic activity and encourage the entry of foreign banks into the domestic market. This has led to the privatisation of publicly-owned banks, cross border and domestic mergers and acquisitions of banks and the international expansion of financial institutions (Rezvanian et. al., 2008). In order to understand the effects that the mergers and acquisitions have on the banking industry it is first essential to understand the manner or modus operandi with which they transpire. Theoretically 'a merger occurs when an independent bank loses its charter and becomes a part of an existing bank with one headquarter and a unified branch network (Dario Farcarelli 2002).' In India this consolidation strategy has been initiated by Narasimham committee II. (Kaur, P. & Kaur, G., 2010) Internationally the banking sector has shown a major uproar in the last few years with regard to mergers and acquisitions. Deregulation has been a key driver that has influenced banking institutions to adopt this consolidation strategy. The apparent rewards in the form of economies of scale, diversification, and reduced costs and the new Basel II norms have also led banks to consider M&As. (Srinivasan, R. Chattopadhyay, G. & Sharma, R., 2008)

Before the 1990s Indian companies were under strict control which stifled growth. The economic slump during 1990 led to reforms initiated by the Government of India. The post liberalisation era came into existence from 1991 and since then the Indian Banking sector has seen major structural and strategic changes sustained by privatisation and globalisation (Bhan, A.). This has hastened the entry of foreign banks into the country increasing competitiveness and pushing Indian corporate enterprises to refocus their business with regard to their basic competencies and market share through restructuring exercises such as mergers and acquisitions (Kar, R. N. & Soni, A.).

The Indian government and Reserve Bank of India have realised the importance of these mergers and acquisition in the recent years to bring stability to banking system. Some high profile merger that the industry has seen are the merger of ICICI Ltd. with its banking arm ICICI Banks Ltd, the merger of Global Trust Bank (GTB) with Oriental Bank of Commerce, the merger of IDBI with its banking arm IDBI Bank Ltd, and so on. There have been mergers across all banking categories (i.e. both the private sector & public sector). The motive for a public sector banks has been to merge with the weak bank and that of a private sector bank varies from merger to merger with reasons closely related to that of the localised environment. This report has been written with the reason to understand these localised factors.

### LITERATURE REVIEW

According to Economy Watch (2010), mergers and acquisitions not only facilitate growth in banking operations and minimise expenses but also reduce competition from the banking industry. In the banking industry there usually exists a trend of horizontal merger, where the merging entities are engaged in the same kind of business. However cross-border/ international mergers and acquisitions are also becoming popular by doing this global banking institutions not only achieve a strategic benefit but also enhance their market share. Mergers and acquisitions also capacitate banks to ensure efficiency, profitability, and synergy and increase shareholder value (Economy Watch, 2011).

'India is slowly but surely moving from a regime of large number of small banks to small number of large banks' (Prajapati, S., 2010).

There are numerous motives which can be taken together or in isolation that encourage banks to undertake mergers and acquisitions and been the reason to have enhanced profitability as a long term corporate goal (Khemani, 1991 cited in Kar, R. N. & Soni, A.). The literature states that one of the foremost motives is to attain operational synergies through economies of scale (When banks merger/combine/ acquire then the combined entity gains from operating and financial synergies) and scope (facilitating entry into new markets where banks can cross their product to existing customers) (Rezitis, A. N., 2007). The principle of synergy works on a phenomenon that economists refer to as "2+2=5" effect will basically means that the combined entity will create more value than the individual entities (Prajapati, S., 2010).

The second most perceived motivation for banks to undergo mergers and acquisitions, according to studies, is the access to new markets. 'This is more evident from voluntary mergers such as merger between Centurion Bank and New Bank of Punjab.' (Prajapati, S., 2010). It works on the motivation that the acquiring company will absorb one of its competitors and thus increase its market share and grow earnings. They may also give them new sales opportunities and also make it easier to raise capital than smaller firms.

Prajapatis' (2010) study shows that a 'significant number of banks have assigned modest ranking to benefits like reduction in cost of funds, diversification of loan portfolio and expansion of range of services available to the public. Majority of the banks have assigned lowest priority to the fact that mergers may bring improvement in employee incentives and extension of career opportunities.' (Prajapati, S., 2010).

Apart from these motives the tax shields act 'as a catalyst for a strong bank to acquire distressed banks that have accumulated losses and unclaimed depreciation benefits in their books'. And also in order to 'protect depositors, and prevent the de-stabilisation of the financial services sector, the RBI steps in to force the merger of a distressed bank'. (Srinivasan, R. Chattopadhyay, G. & Sharma, R., 2008)

'Merger of two weaker banks or merger of one healthy bank with one weak bank can be treated as the faster and less costly way to improve profitability than spurring internal growth' (Franz, H. Khan cited in *The Free Library by Farlex, 2010*).

Merger and acquisition have both financial and strategic implication and over the years there have been a number of studies conducted that analyse this impact on the efficiency of banks. Studies that are conducted are either 'ex-ante' studies that assess stock price movement with regard to merger announcement or 'ex-post' studies that assess the performance by comparing pre and post merger performance of banks.

Empirical studies of this type indicate that a target firm's shareholders benefit and the bidding firm's shareholders generally lose (Franks & Harris, 1989 cited in Kar, R. N. & Soni, A.). Performance is considered to have improved if the return to shareholders has increased post merger. Industrial organisation studies on profitability consider longer time periods than share price monitoring studies. 'Most of the firms do not show significant improvement in long term profitability after acquisition (Scherer, 1988 cited in Kar, R. N. & Soni, A.). There are some studies which have concluded that conglomerate M&A's provide more favourable results than horizontal and vertical M&A's' (Reid, 1968; Mueller, 1980 cited in Kar, R. N. & Soni, A.). The pre merge and post merge operating profit margin, compared by Das (2000 cited in Kar, R. N. & Soni, A.), 'for a sample of 14 acquiring firms and find a decline in profitability in 8 of these companies after merger'. There are studies that go on to support Das (Saple 2000 cited in Kar, R. N. & Soni, A.) and these observe 'that mergers did not lead to an improvement in performance as measured by profitability (return over net assets) adjusted for the industry average.'

The literature also goes on to suggest that there is mixed empirical evidence with regard to impact of merger and acquisitions on efficiency and performance in banks. Most of these studies focus on developed economies and even if there is literature on mergers and acquisitions in India it goes as far as 2006. In this paper we look to understand the impact that recent mergers have had in the banking industry (*The Free Library by Farlex, 2010*).

Therefore since deregulation in 1991 there have been a number of challenges faced by banks and new operating initiatives have introduced all to the likes of 'Non – Performing Assets, Competition, Asset Size, Capital Base, universal Banking, Customer Service, Branch Banking, Technology, Basel II Implementation, Implementation of New Accounting Standards, Transparency and Disclosures, Financial Conglomerates, Know Your Customer (KYC)' (Pamarty, M.)

Though, there are huge volumes of research on mergers and acquisitions in developed nations there is a lack of information in developing countries like India. The evidence so far is mixed and not recent. This report will look to draw definite conclusions and update the studies.

## RESEARCH METHODOLOGY OF THE STUDY

Keeping in mind the literature on the subject and the scope and significance of the study the following are the objectives of this study:

1. To analyze the benefits and costs involved with Mergers & Acquisitions in banks.
2. To understand the strategic and financial implications of these Mergers & Acquisitions.

These objectives will be studied using the case study of four mergers that have occurred in between 2005- 2010 i.e. the merger between ICICI Bank and Bank of Rajasthan, IDBI Bank and United Western Bank, HDFC Bank and Centurion Bank of Punjab, and Federal Bank and Ganesh Bank of Kurundwad.

Returns of the stock have been calculated by comparing the closing stock price on the t day (Day zero) to the closing stock price of the stock on t-1 day. The expected rate of the return is calculated using the using the capital asset pricing model. The abnormal Returns have been calculated by subtracting the expected returns from the actual stock returns. Over the period of 60 days pre and post merger the abnormal returns were found and paired t-test was applied on these abnormal returns. 'If the value given by the t-test was less than .05 then the hypothesis which is that the data sets are similar over the period of study is rejected and we conclude that the significant effect of merger is prevalent' (Brage, V. & Eckerstom, G.). Therefore the short term effects of the merger and acquisition on the bank can be identified.

The Cumulative Abnormal Return (CAR) is also calculated for a period of 20 days after the event window. If the CAR is positive after the event window then there is a value added to the shareholders wealth (Mei, L, 2008).

In order to analyse the long term effect the merger has on the bank and the financial performance of banks we use the EVA model which link finance and the competitive strategy framework and also indicates value to the shareholder. The data used for this is financials of the bank one year pre merger and three years' post merger financials of the merged banks.

$EVA = \text{Net operating profit of the company (NOPAT/ Total capital employed)} - \text{Cost of the capital} \dots\dots\dots (1)$

$NOPAT = EBIT * (1 - \text{tax rate}) \dots\dots\dots (2)$

Cost of the capital has been calculated as WACC which is weighted average cost of capital. This is the weighted sum of the cost of debt and cost of equity. The weights are based on the book values of debt and equity. The cost of debt is calculated as interest after tax over current total debt and cost of equity is calculated using the CAPM model where the risk free rate is the rate of government treasury bonds at the time and the Beta is as provided by the stock market for the period

Total Capital Employed has been calculated as the sum of total equity, reserves and borrowings.

'This formula will give us a positive or a negative EVA number. Positive EVA number means that the company is going to create value for its shareholders and negative EVA number means that it is destroying the value of the shareholders' (Chong et. al., 2009)

The third part involves analysing the financial ratios of the five banks from the period 2000- 2010. The data for the same will be collected from ACE Equity and money control. The ratios will analyse the liquidity position, operating efficiency, overall efficiency, return to equity shareholder, return on networth, and earnings per share.

## ANALYSIS & OBSERVATIONS

The mergers and acquisitions in the Indian Banking Sector are considered to be imperative due to the conducive environment that exists in the industry. In order to understand what motivated each of the banks to undergo the respective mergers we analyse the different motivations, the short term and long term implications on the shareholders and financial implications behind each merger.

### 1. ICICI BANK AND BANK OF RAJASTHAN

ICICI Bank had a 'new-found-branch-strategy' and thus one of the prime motives for ICICI Bank taking over Bank of Rajasthan is expand to new markets as Bank of Rajasthan's branches are concentrate in Northern & Western India thus ensuring deeper access to these markets. Bank of Rajasthan promoters (who had a 55% stake) agreed to this takeover because there was mounting pressure from SEBI to do so, thus creating a win-win situation for both banks. (Anon., 2010)

The pressing issue at the time of this takeover is that Bank of Rajasthan had a considerable amount of legal liabilities and bad debt which seems to be under control but there could be cause of worry. (Anon., 2011)

On 19<sup>th</sup> May 2010 (t), ICICI Bank Board of Directors approves the amalgamation with Bank of Rajasthan. On conducting the analysis of the post merger effect on the shareholders of ICICI Bank using T-test, CAR and EVA the following conclusions are drawn.

- To establish that the merger has had an effect over a short period and to measure the benefits of this deal we ran the paired t-test with the time period of t+60, t-60, t. The value of t-test for this deal for t+60, t-60 is coming out be .60 (Table 1.1) which is quite high and accepts our hypothesis that the merger has not had a significant effect on the abnormal returns of the bank pre merger and post merger.
- The abnormal return on day t is negative indicating that the announcement of merger has been accepted as a negative news but the announcement though there has been improvements they are not significant enough. This shows that over a short period of time merger did not affect the returns. (Table 1.2)
- Then we studied effect of merger over a long period of time that is one year using EVA. The deal took place in May 2010 so we calculate the economic value added by the merger in the year FY 2009-10 (the year before the merger) & FY 2010-11 (the year of the merger). For the acquirer ICICI Bank the EVA value of 2009-10 is negative 0.79%. In the year of the merger its value decreases to negative 1.59% which is a clear indication that the news of the merger of the two banks did not create positive impact on profitability with the increase in capital employed (Table 1.3).

To further understand the financial implications of the merger we conduct a ratio analysis pre and post merger. Since the merger took place in FY 09-10 we have considered that and compared it to two years previous to that (Table 1.4).

- The liquidity position of the ICICI Bank has not changed significantly post merger. The cash-deposit ratio is expected to decrease due to the expected increase in deposits.
- Post merger the overall efficiency of the acquiring bank ICICI is expected to increase by almost 22 % from the previous year and an indicator that earnings are looking to increase.
- When shareholders position is analysed it is seen though the EPS is expected to return the ROE is expected to decrease. This decrease in ROE is consistent with CAR and t-test results.
- The bank has taken on more debt post merger which may not be an ideal position

Overall it is seen that post merger though ICICI Bank has been able to increase its deposits it hasn't been able to convert the acquisition into a significant increase in investments to create a recognisable value for their shareholders wealth.

## 2. IDBI BANK AND UNITED WESTERN BANK

United Western Bank had been in trouble for a while as they had a host of problems from making 'irregular transactions with some of its major shareholders, conflicts between its major shareholders regarding the ownership of the bank, poor governance and inefficient management of capital' causing RBI to intervene and have another bank takeover its entire assets, liabilities and operations. (IBS Centre for Management Research, 2006)

The criteria to determine which of the many interested banks would acquire United Western was 'depositor interest apart, the RBI considered employees' interest and whether the acquiring bank sought any regulatory forbearance, Shareholder interest was the fourth yardstick. Also factors such as branch network of the acquiring bank, the technology it employed and the synergy that would result from the acquisition, if any, were also considered.' (Anon., 2006). On 13<sup>th</sup> September, 2006 RBI announced that United Western would merge with IDBI and that it would be evident in the third quarter financials of FY 2006-07.

This merger is going to improve the synergies of IDBI Bank (then just being converted into a financial institution). The number of branches that IDBI Bank will have under its control post the merger with United Western will increase from 195 to 425. 'The merger will also expand IDBI's asset base by Rs 7,166 crore.' (Rediff Business, 2006). Its market in Maharashtra (one of the richest loan markets) will increase and thus eventually increase the economies of scale and scope of the bank as they expect to lower the costs it takes to raise their resources. IDBI plans on using the branches of United Western to meet their priority sector target as the acquired bank has a good rural presence (TNN, 2006).

'According to the amalgamation scheme, all the employees of UWB will continue in service and be deemed to have been appointed in IDBI Ltd at the same remuneration and on the same terms and conditions of service.' (Anon., 2006) In order to study the post merger effect on the shareholders of IDBI Bank using T-test, CAR and EVA the following conclusions are drawn.

- To understand the effect this merger had on the IDBI Bank's shareholders over a short period we ran the paired t-test with the time period of t+60, t-60, t. The value of t-test for this deal for t+60, t-60 is coming out to be .52 (Table 2.1) which is quite high and accepts our hypothesis that the merger has not had a significant effect on the abnormal returns of the bank pre merger and post merger.
- The abnormal return on day t surged at almost a positive 11% indicating that the announcement of merger has been accepted positively by the market. However on observing CAR post the announcement by the RBI there have been mixed responses over the next 20 days but they are not significant enough. This shows that over a short period of time merger did not affect the returns (Table 2.2). It can also be noted that on 27<sup>th</sup> September 2006 when United Western Bank objected to the merger with IDBI they took it positively and the prices went up, therefore one can conclude that initially the shareholders considered the merger good but over a short period felt quite the opposite.
- To study the effect of merger in the long term that is one year we use EVA. The takeover took place in September 2006 so we calculate the EVA for FY 2005-06 (the year before the merger), FY 2006-07 (the year of the merger) & FY 2007-08. The EVA of IDBI Bank has been negative for all three years but has increased from -5.57% to -5.08% to -3.85% over the years, which indicates that the profitability of the firm has been improving (Table 2.3).

The financial implications of the merger can be further understood on conducting ratio analysis pre and post merger. Since the merger took place in FY 06-07 we have considered that and compared it to two years previous and two year post the merger for the analysis (Table 2.4).

- The liquidity position of the IDBI Bank has not improved post merger. The investment-deposit ratio has decreased, this is because the deposits have increased by huge margins but there has not been proportionate increase in the banks investments.
- Over the years considered the efficiency of IDBI Bank has been improving. Post merger the operating profit of IDBI increased by almost 42% and overall efficiency of the acquiring bank IDBI increased by almost 15 % from the previous year and an indicator that earnings are looking to further increase over the years.
- There has been a gradual increase in ROE and EPS over the years that are being analysed. This proves that IDBI has been making good investments and that shareholders value though marginally will continue to increase.
- The bank has been able to reduce debt-equity ratio post merger thus ensuring that the financial risk of its shareholders is being reduced.

Post merger IDBI Bank has been able to lower their cost of acquiring their resources, increase its deposits it has been able to convert the acquisition into a significant increase in investments to create a recognisable value for their shareholders wealth and improve overall efficiency and profitability making the merger synergistic.

## 3. HDFC BANK AND CENTURION BANK OF PUNJAB

'CBoP has not been performing well operationally its costs were high and growth was low as compared to industry standards.' (Digital Inspiration, 2011)

HDFC Bank was looking to grow and keep up with the fast growing economy by increasing their scale and geographical reach. They picked to do this with Centurion Bank of Punjab as they have the similar beliefs with respect to the 'terms of culture, strategic intent and approach to business' and 'also desperately need experienced staff to expand their services'. (Global Finance, 2011)

'After the merger, HDFC Bank will be the third-largest bank by assets in the country, trailing State Bank of India and ICICI Bank' (Global Finance, 2011).

This merger will not only allow HDFC Bank reach new markets but will also ensure that their market share increases as 'the combined entity will have a nationwide network of 1,148 branches, the largest of any private sector bank in India', overtaking ICICI Bank in the number of branches and increase its presence in states like Punjab, Haryana and Kerala (Economist, 2008 & Digital Inspiration, 2011).

'HDFC Bank plans to expand overseas and already has acquired a license for a branch in Bahrain.' (Global Finance, 2011), Centurion Bank of Punjab's has expertise in international markets and this will help set the platform to compete in local and global markets (Hindu, 2011). On 29<sup>th</sup> February 2008, HDFC Bank announced its interest in merging with Centurion Bank of Punjab and in order to study the post merger effect on the shareholders of HDFC Bank we use T-test, CAR and EVA and drew the following conclusions:

- To understand the effect this merger had on the HDFC Bank's shareholders over a short period we ran the paired t-test with the time period of t+60, t-60, t. The value of t-test for this deal for t+60, t-60 is coming out to be .33 (Table 3.1) which is not significant and accepts our hypothesis that the merger has not had a significant effect on the abnormal returns of the bank pre merger and post merger.
- The abnormal return on day t surged at almost a positive 62% indicating that the announcement of merger has been accepted more than positively by the market. However on observing CAR post the announcement by the RBI there have been mixed responses over the next 20 days but they are not significant enough. This shows that over a short period of time merger did not affect the returns (Table 3.2).
- To study the effect of merger in the long term that is one year we use EVA. The takeover took place in February 2009 so we calculate the EVA for FY 2007-08 (the year before the merger), FY 2008-09 (the year of the merger) & FY 2009-10 (the year after the merger). The EVA of HDFC Bank has been positive for all three years and it has increased from about 7% pre merger to 12% in the year of merge to 15% post merger showing that the shareholder's value is increasing over the long term (Table 3.3).

On conducting ratio analysis pre and post merger the financial implications that the merger has had on HDFC Bank can be understood. Since the merger took place in FY 07-08 we have considered that and compared it to two years previous and two year post the merger for the analysis (Table 3.4).

- The bank has been able to maintain its liquidity position post merger with its investment-deposit ratio and cash-deposit ratio remaining almost similar as deposits, cash and investments have increased almost proportionately.
- The efficiency of the bank has been positive and growing steadily over the years' both pre and post merger. In the year after the merger however the growth sky rocketed. The operating efficiency post merger increased by huge margins post merger year (almost 150%) which means that the company was healthier than ever and has only improved since. The overall efficiency has also seen high improvement of 41%
- The Return on Equity has been almost similar over the years both pre and post merger. The EPS has been consistently increasing over the five years too, being at Rs. 32.29 in the year prior to the merger and 52.77 in the year post merger. This proves that the bank uses owners' funds to generate earning growth and this with the operating efficiency proves that shareholders wealth is increasing post merger.
- The bank has been able to reduce its debt- equity ratio post merger by almost half thus ensuring that the financial risk of its shareholders is being reduced by half.

HDFC Bank post merger has been able to lower the financial risk and increase its value. Its economies of scale and scope have played a major role in this, proving what CRISIL, the rating agency, said about 'the benefits of an expanded branch network and wider geographical coverage will more than offset any short-term negatives.' (Economist, 2008)

#### 4. FEDERAL BANK AND GANESH BANK OF KURUNDWAD

Ganesh Bank of Kurundwad's net worth has turned negative and the Reserve Bank of India had put it under moratorium. The bank was unable to create a new and credible plan to raise capital.

Federal Bank which is well established in Kerala and also has branches across other states had been looking to grow inorganically by expanding out of Kerala and expanding its delivery channels.

With Ganesh Bank's operation having great reach in Karnataka and Maharashtra, Federal Bank was confident that merging with the bank would allow them to expand their business in these regions and thus submitted a proposal to the RBI. After consideration of factors such as 'the interest of depositors of Ganesh Bank of Kurundwad as well as the bank's strengths and weaknesses' the RBI prepared a draft for the amalgamation. (Hindu, 2006)

The merger is considered to be beneficial to Federal Bank since it gives them access to locations where they do not have a presence and also since they focus on giving advances to SME's and agricultural enterprises this would create potential growth centres, thus improving their overall synergies (Money Control, 2006).

They however will lose down all the loss making branches of Ganesh Bank and integrate the other branches as per convenience.

The employees of Ganesh Bank 'will continue in service and be deemed to have been appointed in Federal Bank at the same remuneration and on the same terms and conditions of service.' (Hindu, 2006)

On 24<sup>th</sup> January 2008 (t), Federal Bank announced its interest in merging with Ganesh Bank of Kurundwad and in order to study the post merger effect on the shareholders of Federal Bank we use T-test, CAR and EVA and drew the following conclusions:

- On running the paired t -test with the time period of t+60, t-60, t we will be able to understand the effect this merger had on the Federal Bank's shareholders over a short period. The value of t-test for this deal for t+60, t-60 is coming out be .84 (Table 4.1) which is not significant and accepts our hypothesis that the merger has not had a significant effect on the abnormal returns of the bank pre merger and post merger.
- The abnormal return on day (t) dropped to a negative 4.73% indicating that the announcement of merger has been accepted negatively by the market but it bounced back on the next trading day. On further observing the CAR, post the announcement there has been mixed responses over the next 20 days but they are not significant enough deeming that over a short period of time merger did not affect the returns (Table 4.2).
- We now use EVA to study the effect of merger in the long term (that is one year). The merger took place in January 2006 so we calculate the EVA for FY 2004-05 (the year before the merger), FY 2005-06 (the year of the merger) & FY 2006-07 (the year after the merger). Federal Bank's EVA has been positive for all three years but it has decreased almost half from about 30% pre merger to 15% in the year of merge and post merger showing that the shareholder's value is decreasing over the long term caused by an increase in deposits and cost of capital (Table 4.3).

The ratio analysis pre and post merger indicate the following financial implications that the merger has had on Federal Bank can be understood. Since the merger took place in FY 05-06 we have considered that and compared it to two years previous and two year post the merger for the analysis (Table 4.4).

- When it comes to the liquidity of the bank the investment-deposit ratio hasn't changed significantly post merger. The cash-deposit ratios has improved to a slight extent. This reduces the liquidity risk of the firm slightly.
- Pre merger Federal Bank was not what one would call efficient both operationally and overall but post merger both the overall and operating efficiency has increased and grown by a decent level of about 25- 35 % and proven that the company is becoming healthier and more profitable.
- With both the ROS and EPS decreasing two years post the merger it further validates the fact that the value for the banks shareholders has not been increasing. This tells us that the bank has been using borrowed fund to generate profits and if not stabilised could prove unprofitable for the company.
- The bank's debt- equity ratio post merger increased and then reduced which means that post merger the bank has increased its debt to finance its operations which may not be a very positive move.

It is seen that though Federal Bank may have gained a larger market they have not been able to attain synergies i.e. reach economies of scale and scope as the shareholders value and efficiency have been diminishing.

#### CONCLUSION

The subject of Mergers and Acquisitions will now and continue to be a keen area of interest for a number of researchers. The banking sector in particular is one of the few industries that evoke a high interest as a result of the deregulation and liberalisation in the industry which lead to a wave of merger and acquisitions throughout the industry locally and globally.

This study started by taking a look into the motives behind the mergers & acquisitions in the banking industry. The reasons that have been evident over the cases that have been studied are (1) the fragmented nature of the industry do not allow banks to have a competitive global presence and positioning and (2) large cost involved with internal expansion and probability of increasing their risk profile causing banks to want to increase their market share and look to improve their synergies.

The conclusion that have been drawn from conducting this study on the cases analysed are (a) the effect of the mergers in the short term i.e. in the days immediately before and after the merger, have shown no significant impact with relation to change in the stock prices, (b) on studying the EVA we understand the long term effect or the synergies brought about by the merger and in this study two out of four have showed improved EVA's concluding that the right investment can bring out strategic and financial benefits to the merged company.

The study therefore supports the idea that mergers and acquisitions can generate synergies over the long run if the banks many accurate evaluations, estimate future prospects and carefully allocate their resources. Mergers and acquisitions can be the first step towards creating a profitable organisation but it alone cannot generate synergies and value for the shareholders on a sustained basis. The focus should therefore be on improving governance, risk management and strategic planning.

## APPENDIX

TABLE 1.1: T-TEST RESULT FOR ICICI BANK PRE AND POST MERGER WITH BANK OF RAJASTHAN

t-Test: Paired Two Sample for Means	Variable 1	Variable 2
Mean	0.000261065	0.000403678
Variance	0.000118204	0.000108715
Observations	60	60
Pearson Correlation	-0.017006652	
Hypothesized Mean Difference	0	
Df	59	
t Stat	-0.072717734	
P(T<=t) one-tail	0.471138349	
t Critical one-tail	1.671093033	
P(T<=t) two-tail	0.942276697	
t Critical two-tail	2.000995361	

TABLE 1.2: CAR FOR ICICI BANK POST MERGER WITH BANK OF RAJASTHAN

DATE	ACTUAL RETURN	ABNORMAL RETURN	CUMMULATIVE ABNORMAL RETURN
19-May-10	-7.56%	-3.13%	
20-May-10	0.87%	0.03%	0.03%
21-May-10	0.38%	0.89%	0.92%
24-May-10	-0.32%	-0.70%	0.21%
25-May-10	-2.77%	1.48%	1.69%
26-May-10	4.64%	1.22%	2.90%
27-May-10	1.06%	-1.53%	1.37%
28-May-10	0.92%	-0.97%	0.41%
31-May-10	0.41%	-0.17%	0.24%
01-Jun-10	-3.56%	-0.07%	0.17%
02-Jun-10	0.52%	-0.97%	-0.80%
03-Jun-10	1.39%	-1.30%	-2.09%
04-Jun-10	1.37%	0.64%	-1.45%
07-Jun-10	-2.80%	0.22%	-1.24%
08-Jun-10	-2.95%	-1.53%	-2.76%
09-Jun-10	0.86%	0.47%	-2.29%
10-Jun-10	0.54%	-1.79%	-4.08%
11-Jun-10	2.02%	0.83%	-3.25%
14-Jun-10	0.90%	-1.38%	-4.63%
15-Jun-10	0.75%	0.05%	-4.58%
16-Jun-10	1.92%	1.61%	-2.97%
17-Jun-10	0.81%	-0.37%	-3.34%
18-Jun-10	-1.66%	-1.30%	-4.64%

TABLE 1.3: EVA FOR ICICI BANK PRE AND IN THE YEAR OF MERGER

ICICI BANK	2010-11*	2009-10
Cost of Debt	2.91%	4.47%
Cost of Equity	13.40%	13.40%
Cost of Capital	4.80%	5.81%
NOPAT	68720.78	73283.31
Capital Employed	2143410	1458819.35
EVA	-1.59%	-0.79%

\* projected for the year

TABLE 1.4: RATIO ANALYSIS FOR ICICI BANK PRE AND IN THE YEAR OF MERGER

ICICI BANK	2011*	2010	2009
Investment/Deposits (x)	0.61	0.60	0.47
Cash/ Deposits (x)	0.08	0.14	0.08
Net Profit Growth (%)	22.54	7.10	-9.61
Return to Equity (%)	6.67	7.96	7.83
Earnings per Share (x)	43.52	36.10	33.76
Debt-Equity Ratio	1.9	1.85	1.65

\* projected for the year

TABLE 2.1: T-TEST RESULT FOR IDBI BANK PRE AND POST MERGER WITH UNITED WESTERN BANK LIMITED

t-Test: Paired Two Sample for Means		
	Variable 1	Variable 2
Mean	-0.002694166	-0.00018698
Variance	0.000397574	0.000509664
Observations	60	60
Pearson Correlation	0.019059576	
Hypothesized Mean Difference	0	
Df	59	
t Stat	-0.650951156	
P(T<=t) one-tail	0.258802649	
t Critical one-tail	1.671093033	
P(T<=t) two-tail	0.517605298	
t Critical two-tail	2.000995361	

TABLE 2.2: CAR FOR IDBI BANK POST MERGER WITH UNITED WESTERN BANK LIMITED

DATE	ACTUAL RETURN	ABNORMAL RETURN	CUMMULATIVE ABNORMAL RETURN
13-Sep-06	13.43%	10.84%	
14-Sep-06	-3.94%	-4.61%	-4.61%
15-Sep-06	2.60%	2.33%	-2.28%
18-Sep-06	1.34%	0.79%	-1.49%
19-Sep-06	-0.21%	1.20%	-0.29%
20-Sep-06	4.00%	2.21%	1.92%
21-Sep-06	1.74%	-0.21%	1.71%
22-Sep-06	-2.83%	-2.47%	-0.77%
25-Sep-06	0.82%	1.63%	0.86%
26-Sep-06	0.41%	-1.46%	-0.60%
27-Sep-06	7.29%	7.01%	6.41%
28-Sep-06	3.94%	4.24%	10.64%
29-Sep-06	0.12%	-0.51%	10.13%
03-Oct-06	2.15%	2.88%	13.01%
04-Oct-06	-1.55%	0.57%	13.58%
05-Oct-06	1.43%	-0.49%	13.09%
06-Oct-06	-0.12%	-0.30%	12.79%
09-Oct-06	-0.12%	-0.01%	12.78%
10-Oct-06	-1.07%	-1.21%	11.56%
11-Oct-06	-2.30%	-1.81%	9.75%
12-Oct-06	0.85%	-1.53%	8.22%

TABLE 2.3: EVA FOR IDBI BANK PRE AND IN THE YEAR OF MERGER

IDBI BANK	2005-06	2006-07	2007-08
Cost of Debt	6.48%	6.12%	5.85%
Cost of Equity	12.85%	12.88%	12.88%
Cost of Capital	6.99%	6.73%	6.34%
NOPAT	7634.61	8371.97	11820.71
Capital Employed	539022.66	507042.38	474345.19
EVA	-5.57%	-5.08%	-3.85%

TABLE 2.4: RATIO ANALYSIS FOR IDBI BANK PRE AND IN THE YEAR OF MERGER

IDBI BANK	2009	2008	2007	2006	2005
Investment/Deposits (x)	0.45	0.45	0.59	0.97	1.66
Cash/ Deposits (x)	0.08	0.09	0.12	0.10	0.16
Operating Profit Growth (%)	-3.9	47.04	13.21	144.28	26.8
Net Profit Growth (%)	7.7	15.73	12.38	82.55	131.98
Return to Equity (x)	12.06	11.19	10.00	9.12	9.39
Earnings per Share (x)	11.85	10.06	8.70	7.75	4.26
Debt-Equity Ratio	5.48	6.22	7.13	7.93	7.87

TABLE 3.1: T-TEST RESULT FOR HDFC BANK PRE AND POST MERGER WITH CENTURION BANK OF PUNJAB

t-Test: Paired Two Sample for Means		
	Variable 1	Variable 2
Mean	-0.000743126	0.01090124
Variance	0.000450428	0.007299461
Observations	59	59
Pearson Correlation	-0.1458434	
Hypothesized Mean Difference	0	
Df	58	
t Stat	-0.983011038	
P(T<=t) one-tail	0.164842464	
t Critical one-tail	1.671552763	
P(T<=t) two-tail	0.329684927	
t Critical two-tail	2.001717468	

**TABLE 3.2: CAR FOR HDFC BANK POST MERGER WITH CENTURION BANK OF PUNJAB**

DATE	ACTUAL RETURN	ABNORMAL RETURN	CUMMULATIVE ABNORMAL RETURN
29-Feb-08	-1.08%	0.06%	
03-Mar-08	56.82%	62.01%	62.01%
04-Mar-08	2.29%	4.05%	4.05%
05-Mar-08	5.03%	3.89%	7.94%
07-Mar-08	-5.25%	-2.23%	5.71%
10-Mar-08	-2.76%	-3.34%	2.37%
11-Mar-08	-2.04%	-3.36%	-1.00%
12-Mar-08	1.24%	1.12%	0.12%
13-Mar-08	-1.33%	3.78%	3.90%
14-Mar-08	0.09%	-2.46%	1.44%
17-Mar-08	-11.68%	-6.55%	-5.11%
18-Mar-08	-0.71%	-1.35%	-6.47%
19-Mar-08	0.14%	-0.74%	-7.20%
24-Mar-08	7.22%	6.45%	-0.75%
25-Mar-08	8.68%	3.17%	2.42%
26-Mar-08	2.84%	3.82%	6.24%
27-Mar-08	-0.17%	-0.20%	6.04%
28-Mar-08	-1.96%	-4.19%	1.85%
31-Mar-08	-3.46%	0.72%	2.57%
01-Apr-08	-6.68%	-6.78%	-4.21%
02-Apr-08	4.59%	4.29%	0.08%

**TABLE 3.3: EVA FOR HDFC BANK PRE AND IN THE YEAR OF MERGER**

HDFC BANK	2006-07	2007-08	2008-09
Cost of Debt	3.11%	3.24%	4.17%
Cost of Equity	11.30%	11.30%	11.30%
Cost of Capital	4.99%	4.05%	4.81%
NOPAT	11414.69	26248.67	35232.42
Capital Employed	92485.4	159760.9	177385.7
EVA	7.35%	12.38%	15.05%

**TABLE 3.4: RATIO ANALYSIS FOR HDFC BANK PRE AND IN THE YEAR OF MERGER**

HDFC BANK	2010	2009	2008	2007	2006
Investment/Deposits (x)	0.49	0.45	0.51	0.53	0.64
Cash/ Deposits (x)	0.12	0.07	0.06	0.07	0.08
Operating Profit Growth (%)	24.15	150.09	46.86	29.57	47.24
Net Profit Growth (%)	31.35	41.17	39.31	31.08	30.83
Return to Equity (x)	16.31	17.17	17.74	19.46	17.74
Earnings per Share (x)	64.42	52.77	44.87	36.29	27.92
Debt-Equity Ratio	0.26	0.27	0.41	0.48	0.78

**TABLE 4.1: T-TEST RESULT FOR FEDERAL BANK PRE AND POST MERGER WITH GANESH BANK OF KURUNDWAD**

t-Test: Paired Two Sample for Means	Variable 1	Variable 2
Mean	-0.000871298	-8.7895E-06
Variance	0.000589388	0.000487118
Observations	60	60
Pearson Correlation	-0.027593746	
Hypothesized Mean Difference	0	
Df	59	
t Stat	-0.200884512	
P(T<=t) one-tail	0.420739898	
t Critical one-tail	1.671093033	
P(T<=t) two-tail	0.841479795	
t Critical two-tail	2.000995361	

TABLE 4.2: CAR FOR FEDERAL BANK POST MERGER WITH GANESH BANK OF KURUNDWAD

DATE	ACTUAL RETURN	ABNORMAL RETURN	CUMMULATIVE ABNORMAL RETURN
25-Jan-06	-3.40%	-4.73%	
27-Jan-06	4.08%	4.33%	4.33%
30-Jan-06	-2.57%	-3.40%	0.94%
31-Jan-06	0.19%	1.11%	2.04%
01-Feb-06	-2.04%	-1.91%	0.13%
02-Feb-06	-0.23%	0.61%	0.74%
03-Feb-06	-1.51%	-3.38%	-2.63%
06-Feb-06	0.20%	-0.40%	-3.03%
07-Feb-06	0.34%	0.68%	-2.35%
08-Feb-06	0.51%	-0.06%	-2.41%
10-Feb-06	2.11%	1.69%	-0.72%
13-Feb-06	1.22%	1.94%	1.22%
14-Feb-06	-1.30%	-1.44%	-0.23%
15-Feb-06	-1.23%	-1.22%	-1.44%
16-Feb-06	0.51%	1.74%	0.30%
17-Feb-06	-2.50%	-3.25%	-2.95%
20-Feb-06	-0.78%	-1.69%	-4.64%
21-Feb-06	0.46%	0.00%	-4.65%
22-Feb-06	-1.07%	-1.42%	-6.06%
23-Feb-06	1.96%	2.33%	-3.74%
24-Feb-06	-0.11%	-0.64%	-4.38%

TABLE 4.3: EVA FOR FEDERAL BANK PRE AND IN THE YEAR OF MERGER

FEDERAL BANK	2004-05	2005-06	2006-07
Cost of Debt	3.48%	3.58%	3.61%
Cost of Equity	10.93%	10.93%	10.93%
Cost of Capital	3.78%	4.02%	4.05%
NOPAT	3107.84	3573.12	4554.46
Capital Employed	9092.48	18604.82	22724.16
EVA	30.40%	15.18%	15.99%

TABLE 4.4: RATIO ANALYSIS FOR FEDERAL BANK PRE AND IN THE YEAR OF MERGER

FEDERAL BANK	2008	2007	2006	2005	2004
Investment/Deposits (x)	0.39	0.33	0.35	0.38	0.41
Cash/ Deposits (x)	0.09	0.06	0.07	0.05	0.05
Operating Profit Growth (%)	29.55	35.56	12.93	-8.32	24.25
Net Profit Growth (%)	25.73	29.98	149.99	-33.91	29.8
Return to Equity (x)	13.59	21.38	22.99	13.28	23.29
Earnings per Share (x)	21.52	34.20	26.31	13.73	62.65
Debt-Equity Ratio	0.29	0.50	0.41	0.23	0.18

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## A STUDY OF CREATION OF INNOVATION AND INCREASING SERVICE QUALITY IN COURIER INDUSTRY OF INDIA BY APPLYING MCRM TOOLS AND APPLICATIONS

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### ABSTRACT

*Customer expectations play a vital role in evaluating quality and performance of service. Courier Industry of India is facing severe challenges from Internet enabled tools like electronic mails and there is need to explore new methods to ensure its survival. The purpose of our study was to reveal the expectations of the customers from the courier service providers and to create innovation and increase service quality by applying mCRM applications. The parsimonious 24-item five-dimensional scale consisting of SERVQUAL variables of physical attributes, reliability, personal interaction, problem solving and, policy were used to analyze the customer perceptions. The findings exhibit a close interdependence and correlation of all the factors used in the SERVQUAL variables. It illustrates the ability to use mCRM as a useful managerial tool to build customer relationships in courier services in India.*

### KEYWORDS

Courier Service, Service quality, mCRM, customer loyalty.

### INTRODUCTION

The role of customer relationship cannot be underestimated for building customer loyalty. The organizations which are able to comprehend the strategic advantage of technology alignment are able to reap the fruits of profitability. High service quality is often an important determinant of success in service industry. Customer expects a consistent, reliable service. Modern marketing strategies have focused on incorporating relationship approach towards the customer (Jackson, 1985; Dwyer and Shurr, 1987; Gronroos, 1994) and keeping them satisfied as the profitability of the organization is contributed by them (Nguyen et al., 2007). Customer knowledge is a prerequisite for a successful relationship management program (Gruen, 1997; Campbell, 2003) and enhancing value (Brady 2000). The relationship approach implies developing relationships with the customers and other stakeholders (Ballantyne, 1994; Gronroos, 2000). The elements for improving customer satisfaction include creating a culture of trust and commitment amongst the service personnel. Gummesson, (2001) posits that an important component in CRM is 'h' implying, the human aspect in the service transactions. The use of technology should enable employees in improving the services. Larson and Sasser (2000) suggest that satisfied employees are important elements for transmitting trust amongst customers leading to customer loyalty and profitability. Successful relationship endeavors should entail attracting the profitable customers, retaining them and eliminating the unprofitable customers (Dowling and Uncles, 1997; Romano and Fjermestad 2001-2002). A service model focusing on quality is the one enhancing customer value. The research focuses on unearthing the implications of adopting mCRM courier service industry. The Courier industry in India has witnessed a significant change in the recent years. Indian customers were dependent only on the government postal services, however with multinational companies making a foray into courier services. There has been a dramatic change from the traditional transaction model (Xu et al. 2002) to a more participative model in marketing. The goal of CRM strategies is to acquire knowledge about the customers for developing loyalty (Gebert et al. 2003). Mobile medium has grown in popularity and is used for customer transactions (Arnbjerg, 2004). It was identified in a preliminary research that the Courier service providers were using eCRM and mCRM for providing services. A questionnaire was administered on the customers' to comprehend expectations about the services offered by courier companies. The first section of the paper examines the implications of using eCRM and mCRM in services. The second section, deals with the research methodology to measure the technology usage and customer service in Indian courier industry. The SERVQUAL scale was used for identifying the critical components in courier services. The third section is the findings and analysis, and the fourth section examines the managerial implications and suggestions to the service providers.

### LITERATURE REVIEW

Many companies are using technology as a tool for building relationships with their customers and employees. This would lead to increased customer satisfaction and customer loyalty (Kalakota and Robinson, 2001; Shani and Chalasani, 1992) and creating knowledge repositories (Weck, 2006). It becomes necessary to develop strategies which enable organizations to retain customers and provide them with a "phenomenal experience". Liu et al. (2005) posit that a collaborative system facilitates improved information flow leading to organizational learning (Lin and Wu, 2007). Relationship management leads to organizational learning, wherein customers' experiences are used for improving quality. "CRM extends the concept of selling from a discrete act performed by a salesperson to a continual process involving every person in the company" (Tuck, 1998). The marketing plan should include benefits attained through CRM to provide networks for building collaborations with customers (Gummesson, 2004). This difference in approach means looking at customer databases not as customers as large but as individuals who have specific requirements. Research in CRM is addressed towards understanding its strategic implications for enhancing performance. Smith (2006) has discussed CRM as being strategic asset. The knowledge regarding the customer is vital for organization in designing its CRM strategy. If the marketing programs are designed to improve the interactions with the customers, organizations will be able to build its competitive strategy through knowledge and relationship marketing (Tzokas and Saren 2002). Technology has made various options available to the companies. Fickel (1999) speaks of CRM as being an application which links the various functions of organization with customer 'touch-points' and improving the relationship with customer (Leverin and Liljander 2006). However, some organizations consider CRM as a tool designed for one-to-one customer interactions (Peppers and Rogers, 1999; Thomas and Sullivan, 2005; Payne and Frow, 2005) and for a differentiated marketing (Park and Kim, 2003). The usage of technology has fundamentally changed the way companies interact with their customer (Parasuraman and Zinkhan, 2002). Kim and Hawamdeh (2008) have stressed the importance of using Internet technology for leveraging customer knowledge. As each customer has unique needs, they should be treated on an individual basis (Boulding et. al. 2005). Thus technology should be used for providing customized services to the customers which makes them feel important and a part of the organization. Winn (2002) discusses how technology has been used by Federal Express for efficient customer service—for improving the quality of their internal systems, the speed of their processes, integrate their internal planning and, to enhance the quality of their customer service. Due to exponential growth in the domain of wireless communication; Internet has grown to dominate the marketing strategies. Andrew (2001) suggests use of mCRM in retaining customers. The customer

seeks transactions with the organization enabling access to relevant information regarding products and services (Aungst and Wilson, 2005). "The Internet and email establish a new information network infrastructure that can be much more interactive than the long existing telecom infrastructure, especially with the gradual merger of text, voice, image, data and mobility" (Gummeson, 2004). The problem with Internet is that it is not widely accessible whereas mobile technology has proliferated into the vast customer groups. Hansmann et al. (2001) view mCRM as a successor to computer-centric technology. Research conducted by Chan and Lam (2004) has examined the differences in the features of eCRM and mCRM from the customer's perspective. eCRM is not only technology (Rigby et al., 2002), and uses marketing strategies through web-based technologies for reaching to the customers. eCRM involves people, processes and technologies (Rosen, 2001) enabling organizations' in developing personalized services by facilitating creation of behavior-based customer profiles (Scullin et al., 2004). Every time the customer sends his request, the eCRM software would identify the customer and pull out relevant data pertaining to his request.

Internet proliferation is high and growing steadily in India, its use is comparatively less than mobile user levels. Mobile ownerships are not restricted to access to Internet or literacy. Camponovo et al. (2005) define mCRM as a strategy for nurturing customer relationships by using wireless medium. With technology making drastic inroads in business, mobile communications is setting new rules for doing business (Raisinghani, 2002). It is perceived as a new strategy which establishes an interface with customers. Mobile commerce is seen as the application of mobile technologies to improve the processes and increase the market share (Lehner 2003, and Zobel 2001). It is the adoption and application of mobile technologies in order to support CRM functions (Schierholz, et al., 2007). The mCRM technologies are used for improving marketing, customer services and sales force automation (Balasubramanian et al., 2002; Reichold et al., 2003 Turowski and Pousttchi, 2003; BenMoussa, 2004).

India has a large population of mobile users reporting 13.45 million subscribers in February, 2009 (TRAI in Economic Times, 2009). It is rapidly becoming one of the leading countries with high mobile penetration so the scope of using mobile for customer transaction and service delivery become relevant and cost effective. In courier industry, where the customers are not necessarily educated, but have access to mobile, use of mCRM becomes a strategic tool. Zetie (2002) suggests that successful mCRM strategy should be able to provide accurate identification to business values, link it with mobile services, analyze the desired level of strategic choice of IT devices, and set of policy frameworks. A good service is backed by a diligent attention to customer needs. To measure the customer quality expectations the standard SERVQUAL scale (Parasuraman, Zeithmal, and Berry 1998) was used for the Indian courier services.

**RESEARCH METHODOLOGY**

The purpose of the research was to understand the customer perception and expectation levels in courier service in India on the service quality and the technology usage dimensions. The SERVQUAL scale was adapted for measuring the customer satisfaction and expectation levels. Through initial personal interviews the identification of the expectations of the customers was done. This was in line with the suggestion of Glissmann et al. (2005) that a requirements analysis helps in understanding the expectations of the mobile users, and personalization can be done. The parameters identified under the SERVQUAL were based upon the preliminary research. The research comprised of a survey conducted on a sample of 150 people in four cities of India. This was done to get a sample having different perceptions regarding IT usage in courier industry, as service levels vary in India. The basic idea was to fathom the parameters of quality and suggest mCRM model for improving quality and building relationship. Only 75 questionnaires could be used for the final analysis, as many were incomplete and not returned.

**SURVEY INSTRUMENT**

A closed-ended questionnaire was designed using the SERVQUAL variables. The questionnaire consisted of 24 items. Each service quality item was rated using a 5-point Likert scale, ranging from "Strongly Disagree (1)" to "Strongly Agree (5)". The five variables of SERVQUAL considered are described as:

1. **Physical Aspect:** includes the physical attributes of the premise (condition of the building, cleanliness, lighting, and aesthetics), equipments, personnel (attitude, ability to use the equipment, communication), and visuals (posters, flyers, bulletin boards).
2. **Reliability:** measured the feeling of confidence the customers felt after using a service.
3. **Problem Solving:** measured the importance of the qualification, accessibility, courtesy, access to information, and ability to use equipments by the employees for rendering services to users.
4. **Personal Interaction:** Willingness to help customers, provide prompt service, give personal attention to customers.
5. **Policy:** measured the importance of company's policy for providing special offers, discounts and facilitating in payments through different modes.

The research framework was designed after conducting a preliminary test and identifying the basic service components which are attributed by customers as being important. The pre-test was conducted on a sample of 50 respondents, and their inputs were taken up for framing the quality dimensions of the courier industry.

**RESEARCH FRAMEWORK**

**ANALYSIS**

Sample of 150 people was selected from four different cities in India. Out of 75 usable questionnaires, 61 respondents were males and 17 females. The Correlation between the various parameters was calculated to ascertain the degree of interrelationships existing between them.

**TABLE 1: CORRELATION BETWEEN PERSONAL INTERACTION AND POLICY**

Responses	Personal Interaction(X)	Policy(Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	32	10	320	1024	100
Disagree somewhat	142	39	5538	20164	9261
Neutral	54	16	864	2916	256
Agree somewhat	426	282	120132	181476	79524
Strongly agree	21	32	672	441	1024
<b>Total</b>	<b>ΣX= 675</b>	<b>ΣY= 379</b>	<b>ΣXY=127526</b>	<b>ΣX<sup>2</sup>=206021</b>	<b>ΣY<sup>2</sup>=90165</b>
	<b>ΣX/N=135</b>	<b>ΣY/N=75.8</b>	<b>ΣXY/N=25505.2</b>	<b>ΣX<sup>2</sup>/N=41204.2</b>	<b>ΣY<sup>2</sup>/N=18033</b>

$$r = (25505.2 - (135 * 75.8)) / \text{Sqrt}((41204.2 - (135)^2) * (18033 - (75.8)^2))$$

$$r = 0.97$$

A correlation value of 0.97 between personal interaction and policy shows that positive perceptions of the customers are interrelated with the company's policy. If policy is favorable then the personal interaction will be effective.

TABLE 2: CORRELATION BETWEEN PERSONAL INTERACTION AND PHYSICAL ASPECTS

Responses	Personal Interaction(X)	Physical aspect(Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	32	2	64	1024	4
Disagree somewhat	142	40	5680	20164	1600
Neutral	54	16	864	2916	256
Agree somewhat	426	158	67308	181476	24964
Strongly agree	21	9	189	441	81
<b>Total</b>	<b>ΣX= 675</b>	<b>ΣY= 225</b>	<b>ΣXY=74105</b>	<b>ΣX<sup>2</sup>=206021</b>	<b>ΣY<sup>2</sup>=26905</b>
	<b>ΣX/N=135</b>	<b>ΣY/N=45</b>	<b>ΣXY/N=14821</b>	<b>ΣX<sup>2</sup>/N=41204.2</b>	<b>ΣY<sup>2</sup>/N=5381</b>

$$r = (14821 - (135 * 45)) / \text{Sqrt}((41204.2 - (135)^2) * (5381 - (45)^2))$$

$$r = 0.99$$

The above correlation value of .99 shows a close interrelationship between personal interaction of the employees with the customers and the physical aspect of the service. The impression regarding the personnel's involvement with the customer is fostered by the presence of adequate support facilities provided at the service encounter. Employees can be facilitated through adequate support equipment and technologies for enhancing the service delivery platform.

TABLE 3: CORRELATION BETWEEN RELIABILITY AND PHYSICAL ASPECT

Responses	Reliability(X)	Physical aspect(Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	2	2	4	4	4
Disagree somewhat	63	40	2520	3969	1600
Neutral	30	16	480	900	256
Agree somewhat	194	158	30652	37636	24964
Strongly agree	11	9	99	121	81
<b>Total</b>	<b>ΣX= 300</b>	<b>ΣY= 225</b>	<b>ΣXY=33755</b>	<b>ΣX<sup>2</sup>=42630</b>	<b>ΣY<sup>2</sup>=26905</b>
	<b>ΣX/N=60</b>	<b>ΣY/N=45</b>	<b>ΣXY/N=6751</b>	<b>ΣX<sup>2</sup>/N=8526</b>	<b>ΣY<sup>2</sup>/N=5381</b>

$$r = (6751 - (60 * 45)) / \text{Sqrt}((8526 - (60)^2) * (5381 - (45)^2))$$

$$r = 0.99$$

The positive and high correlation of .99 between reliability and physical aspect again reiterates the point that reliability of the service quality is dependent upon the physical systems and environment present for delivering the service to the customers. The customers rate the service as being reliable if it is backed by appropriate physical ambience and equipments.

TABLE 4: CORRELATION BETWEEN PHYSICAL ASPECT AND PROBLEM SOLVING

Responses	Physical aspect(X)	Problem Solving (Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	2	8	16	4	64
Disagree somewhat	40	27	1080	1600	729
Neutral	16	22	352	256	484
Agree somewhat	158	160	25280	24964	25600
Strongly agree	9	8	72	81	64
<b>Total</b>	<b>ΣX= 225</b>	<b>ΣY= 225</b>	<b>ΣXY=26800</b>	<b>ΣX<sup>2</sup>=42630</b>	<b>ΣY<sup>2</sup>=26941</b>
	<b>ΣX/N=45</b>	<b>ΣY/N=45</b>	<b>ΣXY/N=5360</b>	<b>ΣX<sup>2</sup>/N=8526</b>	<b>ΣY<sup>2</sup>/N=5388.2</b>

$$r = (5360 - (45 * 45)) / \text{Sqrt}((8526 - (45)^2) * (5388.2 - (45)^2))$$

$$r = 0.99$$

The above correlation value shows the interdependence of physical aspects and problem solving capability of the personnel. This again reinforces that quality of service is dependent upon the support of the physical ambience and facilities. If the facilities provided are of the good quality, the personnel would be able to resolve customer complaints in an efficient manner.

TABLE 5: PERSONAL INTERACTION AND PROBLEM SOLVING

Responses	Personal Interaction(X)	Problem Solving (Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	32	8	256	1024	64
Disagree somewhat	142	27	1080	20164	729
Neutral	54	22	3834	2916	484
Agree somewhat	426	160	68160	181476	25600
Strongly agree	21	8	168	441	64
<b>Total</b>	<b>ΣX= 675</b>	<b>ΣY= 225</b>	<b>ΣXY=73498</b>	<b>ΣX<sup>2</sup>=206021</b>	<b>ΣY<sup>2</sup>=26941</b>
	<b>ΣX/N=135</b>	<b>ΣY/N=45</b>	<b>ΣXY/N=14699.6</b>	<b>ΣX<sup>2</sup>/N=41204.2</b>	<b>ΣY<sup>2</sup>/N=5388.2</b>

$$r = (14699.6 - (135 * 45)) / \text{Sqrt}((41204.2 - (135)^2) * (5388.2 - (45)^2))$$

$$r = 0.98$$

The quality of the service delivery in the courier industry is largely dependent upon the employees and this was evident from the high correlation which existed between personnel interactions with customers and their capability to solve their problems. In services, the quality is directly related to the relationships the employees have with the customers and they feel special if special attention is given to their requests and grievances.

TABLE 6: POLICY AND PHYSICAL ASPECT

Responses	Policy(X)	Physical Aspect(Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	10	2	20	100	4
Disagree somewhat	39	40	1560	1521	1600
Neutral	16	16	256	256	256
Agree somewhat	282	158	44556	79524	24964
Strongly agree	32	9	288	1024	81
<b>Total</b>	<b>ΣX= 379</b>	<b>ΣY= 234</b>	<b>ΣXY=46680</b>	<b>ΣX<sup>2</sup>=206021</b>	<b>ΣY<sup>2</sup>=26910</b>
	<b>ΣX/N=75.8</b>	<b>ΣY/N=46.8</b>	<b>ΣXY/N=9336</b>	<b>ΣX<sup>2</sup>/N=41204.2</b>	<b>ΣY<sup>2</sup>/N=5382</b>

$$r = (9336 - (75.8 * 46.8)) / \text{Sqrt}((41204.2 - (75.8)^2) * (5382 - (46.8)^2))$$

$$r = 0.98$$

The policy of the service provider to handle the customer orders and complaints are based upon the organization's policies. These are related with the kind of facilities the service provider provides to the customer so that the policies get the backing from the physical aspects of the service. A correlation of .98 supports this assumption.

TABLE 7: RELIABILITY AND POLICY

Responses	Reliability(X)	Policy(Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	2	10	20	4	100
Disagree somewhat	63	39	3717	3969	1521
Neutral	30	16	480	900	256
Agree somewhat	194	282	54708	37636	79524
Strongly agree	11	32	352	121	1024
<b>Total</b>	<b>ΣX= 300</b>	<b>ΣY= 379</b>	<b>ΣXY=59277</b>	<b>ΣX<sup>2</sup>=42630</b>	<b>ΣY<sup>2</sup>=26910</b>
	<b>ΣX/N=60</b>	<b>ΣY/N=75.8</b>	<b>ΣXY/N=11855.4</b>	<b>ΣX<sup>2</sup>/N=8526</b>	<b>ΣY<sup>2</sup>/N=5382</b>

$$r = (11855.4 - (60 * 75.8)) / \text{Sqrt}((8526 - (60)^2) * (5382 - (75.8)^2))$$

$$r = 0.97$$

The reliability of the service is supported by the company's policy towards its customers which has a correlation of .97. The policy guideline increases the reliability of the service as the customer is reassured that in case of service failure the courier company would take measures to support and protect his interests.

TABLE 8: PERSONAL INTERACTION AND RELIABILITY

Responses	Personal Interaction (X)	Reliability (Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	32	2	20	1024	4
Disagree somewhat	142	63	3717	20164	3969
Neutral	54	30	480	2916	900
Agree somewhat	426	194	54708	181476	37636
Strongly agree	21	11	352	441	121
<b>Total</b>	<b>ΣX= 675</b>	<b>ΣY= 300</b>	<b>ΣXY=59277</b>	<b>ΣX<sup>2</sup>=206021</b>	<b>ΣY<sup>2</sup>=42630</b>
	<b>ΣX/N=135</b>	<b>ΣY/N=60</b>	<b>ΣXY/N=11855.4</b>	<b>ΣX<sup>2</sup>/N=41204.2</b>	<b>ΣY<sup>2</sup>/N=11855.4</b>

$$r = (11855.4 - (135 * 60)) / \text{Sqrt}((41204.2 - (135)^2) * (11855.4 - (60)^2))$$

$$r = 0.99$$

The support of the personal staff is immense in building long-term relationship with the customers. A high correlation of .99 shows that reliability of the service increases if the personal interaction is high. It implies that customers are reassured about the service delivery through the personnel and the relationship which they have with them.

TABLE 9: PROBLEM SOLVING AND PHYSICAL ASPECT

Responses	Problem Solving (X)	Physical Aspect (Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	8	2	16	64	4
Disagree somewhat	27	40	1080	729	1600
Neutral	22	16	352	484	256
Agree somewhat	160	158	25280	25600	24964
Strongly agree	8	9	72	64	81
<b>Total</b>	<b>ΣX= 225</b>	<b>ΣY= 234</b>	<b>ΣXY=26800</b>	<b>ΣX<sup>2</sup>=26941</b>	<b>ΣY<sup>2</sup>=26910</b>
	<b>ΣX/N=45</b>	<b>ΣY/N=46.8</b>	<b>ΣXY/N=5360</b>	<b>ΣX<sup>2</sup>/N=5388.2</b>	<b>ΣY<sup>2</sup>/N=5382</b>

$$r = (5360 - (45 * 46.8)) / \text{Sqrt}((5388.2 - (45)^2) * (5382 - (46.8)^2))$$

$$r = 0.99$$

The problem solving capability of the personnel is improved if it is supported by the physical ambiances and facilities. The high correlation of .99 shows the relationship between the aspects. The technical support provided to the employees helps them developing better CRM with the customers. Failure of physical aspects would have a negative impact on the capability of employees to handle customer complaints.

TABLE 10: RELIABILITY AND PROBLEM SOLVING

Responses	Reliability (X)	Problem Solving (Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	2	8	16	4	64
Disagree somewhat	63	27	1701	3969	729
Neutral	30	22	660	900	484
Agree somewhat	194	160	31040	37636	25600
Strongly agree	11	8	88	121	64
<b>Total</b>	<b>ΣX= 300</b>	<b>ΣY= 234</b>	<b>ΣXY=33505</b>	<b>ΣX<sup>2</sup>=42630</b>	<b>ΣY<sup>2</sup>=26941</b>
	<b>ΣX/N=60</b>	<b>ΣY/N=46.8</b>	<b>ΣXY/N=6701</b>	<b>ΣX<sup>2</sup>/N=8526</b>	<b>ΣY<sup>2</sup>/N=5388.2</b>

$$r = (6701 - (60 * 46.8)) / \text{Sqrt}((8526 - (60)^2) * (5388.2 - (46.8)^2))$$

$$r = 0.98$$

The reliability towards the service is enhanced if it is supported by the capability of employees to handle complaints and resolve them. The customer rates the service as being reliable if the personnel are able to solve their problems. A correlation value of .98 shows that in services customers' measure reliability with reference to the problem solving capability of the front-line staff.

TABLE 11: POLICY AND PROBLEM SOLVING

Responses	Policy (X)	Problem Solving (Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	10	8	80	100	64
Disagree somewhat	39	27	1053	1521	729
Neutral	16	22	132	256	484
Agree somewhat	282	160	45120	79524	25600
Strongly agree	32	8	256	1024	64
<b>Total</b>	<b>ΣX= 379</b>	<b>ΣY= 234</b>	<b>ΣXY=46641</b>	<b>ΣX<sup>2</sup>=82425</b>	<b>ΣY<sup>2</sup>=26941</b>
	<b>ΣX/N=75.8</b>	<b>ΣY/N=46.8</b>	<b>ΣXY/N=9328.8</b>	<b>ΣX<sup>2</sup>/N=16485</b>	<b>ΣY<sup>2</sup>/N=5388.2</b>

$$r = (9328.8 - (75.8 * 46.8)) / \text{Sqrt}((16485 - (75.8)^2) * (5388.2 - (46.8)^2))$$

$$r = 0.99$$

If the policy of the company is not clearly defined, the employees would not be able to deal with the customer requirements or handle complaints. The correlation value of .99 reinforces this. The policies of the company provide a guideline to the staff in dealing with customer grievances and providing support to them.

TABLE 12: POLICY AND PERSONAL INTERACTION

Responses	Policy (X)	Personal Interaction (Y)	X*Y	X <sup>2</sup>	Y <sup>2</sup>
Strongly Disagree	10	32	320	100	1024
Disagree somewhat	39	142	5538	1521	20164
Neutral	16	54	864	256	2916
Agree somewhat	282	426	120132	79524	181476
Strongly agree	32	21	672	1024	441
<b>Total</b>	<b>ΣX= 675</b>	<b>ΣY= 234</b>	<b>ΣXY=127526</b>	<b>ΣX<sup>2</sup>=82425</b>	<b>ΣY<sup>2</sup>=26941</b>
	<b>ΣX/N=135</b>	<b>ΣY/N=46.8</b>	<b>ΣXY/N=25505.2</b>	<b>ΣX<sup>2</sup>/N=16485</b>	<b>ΣY<sup>2</sup>/N=5388.2</b>

$$r = (25505.2 - (135 * 46.8)) / \text{Sqrt}((16485 - (135^2)) * (5388.2 - (46.8^2)))$$

$$r = 0.97$$

The personal interaction and relationship building are drawn in the form of customer policy issues. A correlation value of .97 shows the interdependence of the policy and personal interaction factors. The more streamlined and mature policies, the better will be the organizations' capability to enhance the personal interaction between the customers and personnel, enabling the organization in building a relationship with their customers.

TABLE 13: SUMMARY OF FACTOR WISE CORRELATIONS

	Physical Aspect	Reliability	Personal Interaction	Problem Solving	Policy
Physical Aspect	--	0.99	0.99	0.99	0.98
Reliability	0.99	--	0.99	0.98	0.97
Personal Interaction	0.99	0.99	--	0.98	0.97
Problem Solving	0.99	0.98	0.98	--	0.97
Policy	0.98	0.99	0.97	0.99	--

The table summarizes the correlation between factors Physical Aspect, Reliability, Personal Interaction, Problem Solving and Policy, the research suggests a strong correlation between all of them.

The current state of technology adoption and usage in courier services is in the rudimentary level. However, the potential to exploit mobile networks and communication technologies is immense. The customer is more comfortable using mobile phones, as educational qualifications are not pertinent for owning and using mobile phones. Companies are increasingly providing customer services and after-sale support through eCRM and mCRM. Even though the growth of mCRM has not been much in India, the researchers perceived that it has a potential for higher reach and flexibility in providing customized services and can help in building relationships (Barnes, 2000).

**MANAGERIAL IMPLICATIONS**

The results of the study may be used by service providers to improve service quality and provide more value to their customers by catering to their requirements. This would imply use of appropriate strategies to understand the gap and bridge it by enhanced service model. The use of technology is becoming obtrusive and a viable mode for transmitting service, the researchers suggest that technology should be used at the service delivery level. There may be two ways of attaining it—one through expanding the use of technology at the interaction levels and second at the order processing and delivery levels. Looking at the business ideologies of the courier service providers, large investment in technology is not recommended. mCRM is attractive because of its availability in the Indian landscape. It does not require any initial investment and as most of the customers own cell phones, it would be easy to operate and the benefits would accrue to the service providers. Some suggestions provided to the Courier companies are mentioned underneath:

1. Companies may focus on increasing the facility provided to the customer at their counters. This maybe done through mCRM also, facilitating in information sharing and tracking the parcels.
2. Companies can implement mCRM in order to reach the masses. As mobile penetration is more than Internet, hence company can reach to customers faster. This may be done in form of sending alerts, new information about the rates and services through SMS and calling the customer on his mobile phones.
3. Data regarding the different needs of the customers; like business or individual, may be maintained and information may be sent to them through cell phones. This would facilitate in generating greater degree of awareness and consequently loyalty.
4. It was apparent through the research that people did not have sufficient information regarding the basic policies and framework of the courier service provider. The applicability of mCRM maybe explored for improving the service levels and providing the relevant information to the customers.

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## RELATIONSHIP OF FII INFLOWS WITH SPREAD OF STOCK MARKET INDICES IN INDIA

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### ABSTRACT

A major development in our country post 1991 has been liberalization of the financial sector, especially that of capital markets. Our country today has one of the most prominent and followed stock exchanges in the world. Further, India has also been consistently gaining prominence in various international forums, though we still have a long way to go. Developing countries like India are generally capital scarce. So they borrow money from the foreign countries by the way of Foreign Direct Investment & Foreign Institution Investors. The paper is based on the data of four years of from April 2006 to March 2010. The values of FII inflows and the spread of S&P CNX Nifty and BSE Index is taken up. The Chi Square test is applied to find the dependency between the variables and the correlation is calculated for analyzing the degree of relationship between the two variables. The paper suggests that the FIIs does not explains the discrepancy in the spread value of stock market indices and the degree of correlation lies between the range as low and moderate. Psychology plays an important part in driving FIIs inflows in the country. It is because of the volatile nature of investors' sentiments that FIIs are tracked so closely. It would not be prudent to drive away foreign investors from investing in our country.

### KEYWORDS

Developing countries, Chi Square Test, discrepancy, volatile.

### INTRODUCTION

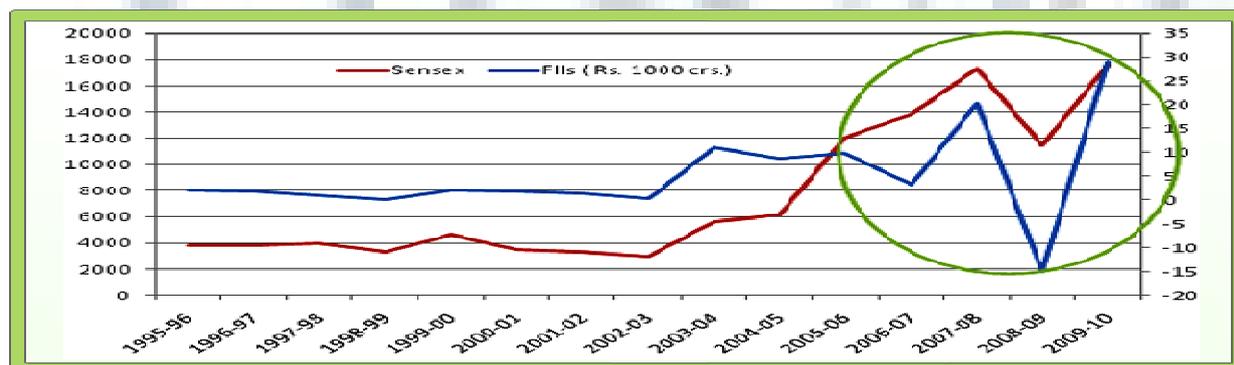
The character of global capital flows to developing countries underwent significant changes on many counts during the 'nineties' (Chalapathi Rao, K. Ranganathan, & Murthy, Dec 1999). A major development in our country post 1991 has been liberalization of the financial sector, especially that of capital markets. Our country today has one of the most prominent and followed stock exchanges in the world. Further, India has also been consistently gaining prominence in various international forums, though we still have a long way to go. Developing countries like India are generally capital scarce. This is because levels of income are lower in comparison to other developed countries, which in turn means savings and investments are also lower. So how do developing nations get out of such a situation? Simple! They borrow money, like we all do when we need to buy a house or a car. Countries can thus invest this borrowed money in various social and physical infrastructures; earn a return on them which helps them pay off their debt, and simultaneously propel the country to a higher growth trajectory.

However, there is another way in which a country can attract foreign money. This is by way of Foreign Direct Investment (FDI) of Portfolio Investment (better known as Institutional Investment). FDI is defined as "investment made to acquire lasting interest in enterprises operating outside of the economy of the investor." Examples of FDI would include POSCO setting up a steel plant in Orissa (in-bound FDI); Tata buying Arcelor (out-bound FDI) and so on.

On the other hand, FII is used to denote an investor, who invests money in the financial markets of a country different from the one in which that investor is incorporated. So, if you as an Indian decide to invest in the US stock markets, it is an out-bound foreign institutional investment. Similarly, suppose a rich American millionaire invests in the Indian stock markets, it would be termed as in-ward FII.

Again FII is been explained by (Khan, Rohit, Goyal, Ranjan, & Agrawal, 2010) as Foreign Institutional Investors (FII) is used to denote an investor; mostly of the form of an institution or entity situated outside the country, which invests money in the financial markets of a country. FIIs in India are companies that are established or incorporated outside India, and is investing in the financial markets of India. Also, a domestic asset management company or domestic portfolio manager who manages funds raised from outside India for investment in India on behalf of a sub-account shall be deemed to be an FII. These investors must register with the Securities & Exchange Board of India.

FIGURE NO. 1: SHOWING THE RELATIONSHIP BETWEEN VALUES OF FIIS AND BSE INDEX CLOSING PRICES



Source: www.moneycontrol.com

Figure No. 1 shows the spectacular rise of the Sensex over the last years. Secondly, we can see how volatile FII flows are. It is almost impossible to predict whether FIIs will be net sellers or net buyers tomorrow. What is more important is that there is no rigid relationship between the Sensex and FII flows. Statisticians use a measure known as the correlation coefficient, which is used to depict a relationship between two variables mathematically.

The extent of FII influence on market players can probably be gauged from the fact that SEBI asked the stock exchanges not to release FII trading details [Hindu Business Line, 1999] as SEBI decided to release the data with a one day lag and after due confirmation with the FIIs' custodians. FIIs outflows have often been blamed for the collapse of stock markets and for having a destabilizing effect on local stock prices (Dornbusch and Park (1995), (Radelet and Sachs 1998).

Movements in the Sensex during the two years have clearly been driven by the behaviour of foreign institutional investors (FIIs), who were responsible for net equity purchases of as much as \$6.6 and \$8.5 billion respectively in 2003 and 2004. These figures compare with a peak level of net purchases of \$3.1 billion as far back as 1996 and net investments by FIIs of just \$753 million in 2002. In sum, the sudden FII interest in Indian markets in the last two years account for the two bouts of medium-term buoyancy that the Sensex recently displayed. (Hindu Business Line, 2005)

Portfolio investments spread risk for foreign investors, and provide an opportunity to share the fruits of growth of developing countries which are expected to grow faster. Investing in emerging markets is expected to provide a better return on investments for pension funds and private investors of the developed countries. (Rao, Ranganathan, Murthy, Dec 1999).

Psychology also play an important role in the inflow of FII inflows and the stock market. For instance, when the stock markets rise, they just seem to be rising. Experts and academicians have studied the behavior of investors, and found that frenzy and greed drive investors during a bull run, and especially when a bull run is at its full momentum, investors tend to "follow the band-wagon" and overlook economic fundamentals while investing. In fact, stock market crashes too occur in similar ways. One major investor may begin selling his stocks suddenly. Looking at him, others may panic, and they too follow suit. Such panic spreads like wild fire in the markets, and ultimately leads to a major crash. This was similar to what happened during the times of Harshad Mehta and Ketan Parikh.

## LITERATURE REVIEW

Dornbusch and Park (1995) had said that FIIs are considered as positive feedback trader means they buy when the market increases and sell when the market falls. This is viewed as destabilizing because the sales will lead the stock market to fall further and their buys increase the stock market. Radelet and Sachs (1998), Richards (2002) had also supported the same.

Khan, Rohit, Goyal, Ranjan, Agrawal, 2010 have explained that FII strongly influence market movements during bear markets. However, the correlation between returns and flows reduces during bull markets. In case of bull and bear phase Nifty explains FII more in bear phase (31%) as compare to bull phase(13%). It indicates that FII don't hesitate to pull out their money from Indian market whenever market faces downward trend as compare to making investment in bull phase.

Research by (Morgan Stanley) also shows that the correlation between foreign inflows and market returns is high during bear phase and weakens with strengthening equity prices due to increased participation by other players. Correlation coefficient is found to be very weak, though it cannot be ignored entirely. In spite of low correlation FIIs grab the headlines because in any kind of market, financial or real, investor sentiment and psychology play a crucial role. This is something that just cannot be captured in a few numbers.

Chandrasekhar & Ghosh (2005) research shows two important areas of FIIs the first is that, if market expectations can turn so whimsically, the signals or rumors on which they are based must lack any substance since any "fundamentals" on which they could be anchored have not shifted so violently. The second is that there must be some unusually strong force that is determining movements in the market which alone can explain the wild swings it is witnessing. The combination of these two factors is indeed a disconcerting phenomenon, since if some force has the ability to lead the market and the others can be taken along without much resistance, the market is in essence being subjected to manipulation, even if not always consciously. Not surprisingly, recent market developments have once more focused attention on the volatility that has come to characterize India's stock markets.

Foreign investors may also invest in Indian companies through the purchase of American Depository Receipts ("ADRs") and Global Depository Receipts (GDRs). Each depository receipt can represent one or more of the underlying shares (Dornbusch & Park, 1995) (Radelet & Sachs, 1998). Indian companies are very familiar with the issuance of these instruments and have tapped the ADR/GDR market frequently to raise foreign capital. Because ADRs/GDRs represent the underlying shares of the issuing company, their value fluctuates along with the value of the underlying shares. (Foreign Investment In India, 2009).

Singh (1999) The foreign investors lobby, particularly international fund managers, and the foreign institutional investors are the consistent advocates of liberalization of financial markets and capital accounts. In the present global context, the investment liberalization (along with trade liberalization) is the main item of the economic agenda set up by the transnational capital. Since TNCs dominate much of the world's trade and investment, the combination of investment liberalization and free trade will immensely enable them to expand and restructure their operations. The opening of India's financial sector provides new business opportunities for the owners and managers of finance capital.

Radelet & Sachs (1998) this study concludes that FII do have any significant impact on the Indian Stock Market but there are other factors like government policies, budgets, bullion market, inflation, economical and political condition, etc. do also have an impact on the Indian stock market. There is a positive correlation between stock indices and FIIs but FIIs didn't have any significant impact on Indian Stock Market.()

Bodla & Kumar (2009) has suggested that it is believed, foreign institutional flows could help in achieving a higher degree of liquidity at stock markets, in increasing price to earning (P/E) ratios and consequently in reducing cost of capital for investment. Lower cost of capital and booming stock market can encourage new equity issues. Foreign portfolio investments provide investors with an array of assets with varying degree of risk, return, and liquidity. The increased choice of assets and existence of vibrant equity markets provide savers with more liquidity and options. This in turn results in augmenting household savings directed towards stock markets. The liquid markets can improve allocations of capital and can enhance prospects for long-term economic growth. Usually, FIIs concentrate on secondary markets. A strong secondary market, besides providing liquidity to primary markets, allows efficient firms to price their new issues at a premium. Moreover, increased competition from foreign institutional investors also paves the way for derivatives market.

Chalapathi Rao, K. Ranganathan, & Murthy (1999) talks about the resemblance between the distribution of trading values at BSE and exposure of FII investments seem to suggest a strong positive relationship between the two and possible influence of FII investment pattern on trading at BSE. This goes to strengthen the general conclusion drawn on the basis of comparison of quarterly net FII investments and movement of the Bombay Stock Exchange Sensitive.

Kollamparambil & Banerjee (2008) their paper investigates the relationship between the Foreign Institutional Investment presence and firm performance of 25 listed banks of the Indian banking industry. The results indicate that the FII share plays a significant and positive role in determining the performance of public sector but not necessarily private sector banks. This is explained by the critical role that FII plays in public sector banks in improving managerial efficiency by avoiding issues relating to moral hazard. Private Banks suffer less from problems of moral hazard, and therefore, the role of FII in such banks is not as critical as in the case of public sector banks.

## OBJECTIVES

- To find the relationship between the FIIs equity investment pattern and BSE Index.
- To find the relationship between the FIIs equity investment pattern and S&P CNX NIFTY.

## METHODOLOGY

### RESEARCH DESIGN

The research design of the paper is an exploratory research design. The paper discuss about the relation of FII Inflows with BSE Index & NSE Index. The values of 4 years of all the 3 variables are taken up. Research is done in two steps. They are:

1. Firstly it is examined that the dependency of variables.
  2. Secondly the co-relation between the variables is calculated to study the relation between the movements of the variables.
- The variables chosen here are FII Inflows, Spread Values of Nifty Index and Spread Values of BSE Index. In first step it is checked that whether FII Inflows and Nifty Index are dependent of each other or not by using Chi-Square test. Similarly, with the same test it is checked whether FII Inflows and BSE Index are dependent of each other or not. On the basis of their dependency their relationship is calculated and analyzed.

**DATA COLLECTION**

Data for the research work is collected from secondary sources. The spread values of Nifty Index and BSE Index are taken from 1<sup>st</sup> April 2006 to 31<sup>st</sup> March, 2010 i.e. the values are of 4 Years. It is been calculated by subtracting opening values from closing values. The value of FII Inflows in the country is also taken up from 1<sup>st</sup> April 2006 to 31<sup>st</sup> March, 2010 i.e. the values are of 4 Years. The source for secondary data considered here were the website of BSE & NSE.

**HYPOTHESIS**

A hypothesis is an assumption about a population parameter to be tested. The test of hypothesis discloses the fact whether the difference between the computed statistic and the hypothetical parameter is significant or otherwise. Hence the test of hypothesis is also known as the test of significance. It is been generally observed that FII do make impact on the stock market indices, so the hypothesis goes as follows:

**H<sub>0A</sub>:** There is association between the values of FII Inflows and spread values of Nifty index and the variables are independent and not closely related.

**H<sub>0B</sub>:** There is association between the values of FII Inflows and spread values of BSE Index and the variables are independent and not closely related.

**DATA ANALYSIS**

In the first step for analyzing the dependency between the Variables, Chi-Square Test is carried out and to find the relation between the variables and Co-relation tool is applied at the second step.

**A. Chi-Square Test:** Chi-Square test is a non-parametric test. It is applied to those problems in which it is studies whether frequency with which a given event has occurred, is significantly different from the one as expected theoretically. (C.R.Kothari, 2009)

**APPLICATION OF CHI- SQUARE TEST**

- a. To test for independence of attributes.
- b. To test goodness of fit.
- c. To test the homogeneity.
- d. To test if the population has a specified value of the variance.

**FORMULA FOR CHI-SQUARE TEST**

$$\chi^2 = \sum_{ij} \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \dots\dots\dots \text{Eq. No. 1}$$

Here

- o Oij = Observed frequency
- o Eij = Expected Frequency = (Row Total\*Column total)/ Grand Total

Chi Square's test is applied where the frequency are not less than 5. If the case occurs where the frequency is less than 5 than Yate's corrected formula is applied where the values are been converted as absolute values and the values of spread and FIIs in this case also have been converted as absolute values.(C.R.Kothari, 2009)

**B. Co-Relation:** Co-relation is the relationship that exists between two or more variables. In other words correlation is a statistical technique which measure and analyze the degree or extent to which two or more variable fluctuate with reference to one another. Thus it denotes the interdependence amongst variates. (C.R.Kothari, 2009)

**CORRELATION IS OF FOUR BROAD TYPES**

- a. Positive and Negative Correlation.
- b. Linear and non-linear Correlation.
- c. Simple and multiple Correlation.
- d. Partial and total Correlation.

In this paper we are analyzing the variables by linear and nonlinear correlation. Linear correlation is one when variations in the values of one variable have born a constant ratio on the values of another variable. On the other hand, non linear correlation exists where the amount of change in one variable does not bear a constant ratio to the amount of change in the other related variables.

Karl Pearson (1857- 1936) the eminent statistician gave the following mathematical formula for measuring the magnitude of linear correlation coefficient between two variables.

$$r_{xy} = \text{Cov. (X, Y)} / (\sqrt{(\text{Var. ("X")} * \text{Var. ("Y")})} \dots\dots\dots \text{Eq. No. 2}$$

**INTERPRETATION OF CORRELATION**

1. 1 = Positive correlation.
2. 0.75 to 1 = High degree of correlation.
3. 0.25 to 0.75 = Moderate degree of correlation.
4. 0 to 0.25 = Low degree of correlation.
5. 0 = No correlation.
6. 0 to -0.25 = Low degree of negative correlation.
7. -0.25 to -0.75 = Moderate degree of correlation.
8. -0.75 to -1 = High degree of negative correlation.
9. -1 = Negative Correlation. (C.R.Kothari, 2009)

**RESULTS AND DISCUSSIONS**

**A. SPREAD OF BSE and FII Inflows:**

**TABLE NO. 1: CHI-SQUARE TEST**

Particulars	Calculated Value	Tabulated Value	Remark
Chi Square	154404	1106.969	Calculated value is greater than tabulated value

The chi-square test measures the discrepancy between the observed cell counts and what you would expect if the rows and columns were unrelated. The two-sided asymptotic significance of the chi-square statistic is greater than the tabulated value, so it's safe to say that the differences are due to chance variation, which implies that the variables are not so much interdependent (Refer Table No. 1). The result of Chi-Square Test says that the FIIs are not able to explain the discrepancy in the Index value. To see the calculation of Chi – Square Test refer table No.6. To authenticate the results correlation is also calculated.

TABLE NO. 2: CORRELATIONS

		Spread BSE	FII
Spread BSE	Pearson Correlation	1	.321**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	5.818E7	5.866E7
	Covariance	59064.763	59553.772
	N	986	986
FII	Pearson Correlation	.321**	1
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	5.866E7	6.475E9
	Covariance	59553.772	6566643.678
	N	986	987

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The value of correlation is also .321 which shows that there exists a low degree of correlation also the significance value shows that there is an association. So the correlation is non linear (Refer Table No. 2).

Hypothesis  $H_{0A}$  is rejected because the value is greater than the table value. So the variables are independent. The values of FII Inflows and Nifty do not move together closely i.e. supported by correlation and there is no association between these variables.

**B. SPREAD OF NIFTY Index and FII Inflows:**

TABLE NO. 3: CHI-SQUARE TEST

Particulars	Calculated Value	Tabulated Value	Remark
Chi Square	110767	1106.969	Calculated value is greater than tabulated value

The value of chi square shows that the calculated value is greater than tabulated value. So the value of FIIs does not explain the discrepancy of the spread of Nifty Index (Refer table no. 3). To see the calculation of Chi - Square value refer Table no. 5. The correlation values are

TABLE NO. 4 CORRELATION

		FII	Spread Nifty
FII	Pearson Correlation	1	.410**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	6.475E9	2.602E7
	Covariance	6566643.678	26413.974
	N	987	986
Spread Nifty	Pearson Correlation	.410**	1
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	2.602E7	7036194.350
	Covariance	26413.974	7143.345
	N	986	986

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The value of correlation is also moderate. So the value shows that the  $H_{0B}$  is rejected and there is no association between FII Inflows and Spread Values of Nifty Index (Refer Table No. 4). These two variables are independent. The value of correlation also supports the points and interprets that it follows a non-linear relationship

**CONCLUSION**

The paper concludes that the values of FII Inflows and the spread values of indexes of NSE and BSE are not correlated and not dependent on each other. The two tools applied to assess the relationship between these two variables are providing empirical evidence to the independency of the variables. In any kind of market, financial or real, investor sentiment and psychology play a crucial role. This is something that just cannot be captured in a few numbers. It is because of the volatile nature of investors' sentiments that FIIs are tracked so closely. It would not be prudent to drive away foreign investors from investing in our country. I had mentioned the importance of foreign capital in the context of a developing economy, and that is precisely why the government has been so keen on liberalizing the external financial sector since 1991. If one foreign investor has had a good experience investing in our country, it builds up our reputation in the international community, and encourages more foreign investors to invest in our economy. However, a crisis of any kind will create panic among foreign investors as well, and regaining their trust and confidence in our economy will entail another mammoth task!

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**WEBSITE**

www.bseindia.com

www.nseindia.com

**TABLES****TABLE NO. 5: CALCULATIONS FOR THE MONTH OF MARCH 2010 OF FIIS AND NSE**

Date	FII	spread Nifty	ABS FII	ABS NSE	TOTAL ROW	Expected FII	Epected NSE	Observed FII & Nifty	EXPECTED	Observed - Expected	(Observed - Expected)2	(Observed - Expected)2/Expected
31-Mar-10	433.52	-40.5	433.52	40.5	474.02	388.7138014	4.1858567	433.52	388.7138	44.8061986	2007.59544	5.164713545
30-Mar-10	579.29	18.95	579.29	18.95	598.24	519.4178308	1.9585675	579.29	519.41783	59.8721692	3584.67665	6.901335369
29-Mar-10	1062.8	21.45	1062.8	21.45	1084.27	952.9728787	2.2169537	1062.82	952.97288	109.847121	12066.3901	12.66183994
26-Mar-10	590.9	35.1	590.9	35.1	626	529.8278862	3.6277425	590.9	529.82789	61.0721138	3729.80308	7.039650382
25-Mar-10	653.22	19.45	653.22	19.45	672.67	585.7068401	2.0102448	653.22	585.70684	67.5131599	4558.02675	7.782095824
23-Mar-10	359.75	-55.75	359.75	55.75	415.5	322.5682553	5.7620126	359.75	322.56826	37.1817447	1382.48214	4.28585924
22-Mar-10	302.78	16	302.78	16	318.78	271.4863554	1.6536718	302.78	271.48636	31.2936446	979.292194	3.60715069
19-Mar-10	284.25	13.35	284.25	13.35	297.6	254.8715124	1.3797824	284.25	254.87151	29.3784876	863.095536	3.386394688
18-Mar-10	484.67	33.45	484.67	33.45	518.12	434.5772239	3.4572076	484.67	434.57722	50.0927761	2509.28622	5.774085887
17-Mar-10	815.94	69.15	815.94	69.15	885.09	731.6090125	7.1469627	815.94	731.60901	84.3309875	7111.71545	9.720650419
16-Mar-10	377.84	-5.55	377.84	5.55	383.39	338.7885743	0.5736174	377.84	338.78857	39.0514257	1525.01385	4.501373329
15-Mar-10	659.7	5.2	659.7	5.2	664.9	591.5171036	0.5374433	659.7	591.5171	68.1828964	4648.90736	7.859294901
12-Mar-10	371.68	17.05	371.68	17.05	388.73	333.2652373	1.762194	371.68	333.26524	38.4147627	1475.69399	4.427986553
11-Mar-10	304.87	14.65	304.87	14.65	319.52	273.3603447	1.5141432	304.87	273.36034	31.5096553	992.858378	3.632049775
10-Mar-10	364.36	-19.55	364.36	19.55	383.91	326.7017915	2.0205802	364.36	326.70179	37.6582085	1418.14066	4.340780188
9-Mar-10	2173.1	31.85	2173.1	31.85	2204.94	1948.491591	3.2918404	2173.09	1948.4916	224.598409	50444.4452	25.8899725
8-Mar-10	1132	8.15	1132	8.15	1140.16	1015.011788	0.8423391	1132.01	1015.0118	116.998212	13688.5816	13.4861307
5-Mar-10	913.34	-16.7	913.34	16.7	930.04	818.9422941	1.7260199	913.34	818.94229	94.3977059	8910.92687	10.88101926
4-Mar-10	633.81	72.3	633.81	72.3	706.11	568.302949	7.4725293	633.81	568.30295	65.507051	4291.17373	7.550855997
3-Mar-10	959.17	81.4	959.17	81.4	1040.57	860.0355621	8.4130552	959.17	860.03556	99.1344379	9827.63678	11.42701211
2-Mar-10	1335.3	63.8	1335.3	63.8	1399.12	1197.308805	6.5940162	1335.32	1197.3088	138.011195	19047.0899	15.90825173

**TABLE NO. 6: CALCULATIONS FOR THE MONTH OF MARCH 2010 OF FIIS AND BSE**

Date	FII	spread BSE	ABS FII	ABS BSE	TOTAL ROW	Expected FII	Epected BSE	Observed FII & Bse	EXPECTED	Observed - Expected	(Observed - Expected)2	(Observed - Expected)2/Expected
31-Mar-10	433.52	-74.62	433.52	74.62	508.1	376.6235	131.5165	433.52	376.6235	56.896	3237.21	8.59535
30-Mar-10	579.29	-113.5	579.29	113.5	692.8	513.4825	179.3075	579.29	513.4825	65.808	4330.63	8.43384
29-Mar-10	1062.8	72.17	1062.8	72.17	1135	841.2325	293.75745	1062.8	841.2325	221.59	49101	58.3679
26-Mar-10	590.9	85.91	590.9	85.91	676.8	501.6384	175.17157	590.9	501.6384	89.262	7967.63	15.8832
25-Mar-10	653.22	100.34	653.22	100.34	753.6	558.524	195.03596	653.22	558.524	94.696	8967.33	16.0554
23-Mar-10	359.75	28.51	359.75	28.51	388.3	287.7708	100.48923	359.75	287.7708	71.979	5181.01	18.0039
22-Mar-10	302.78	-71.39	302.78	71.39	374.2	277.3275	96.842462	302.78	277.3275	25.452	647.828	2.33597
19-Mar-10	284.25	46.76	284.25	46.76	331	245.3382	85.671816	284.25	245.3382	38.912	1514.13	6.1716
18-Mar-10	484.67	26.45	484.67	26.45	511.1	378.8322	132.28778	484.67	378.8322	105.84	11201.6	29.5689
17-Mar-10	815.94	100.61	815.94	100.61	916.6	679.3291	237.22094	815.94	679.3291	136.61	18662.5	27.472
16-Mar-10	377.84	213.34	377.84	213.34	591.2	438.1711	153.00886	377.84	438.1711	-60.331	3639.85	8.3069
15-Mar-10	659.7	-1.98	659.7	1.98	661.7	490.4244	171.25563	659.7	490.4244	169.28	28654.2	58.4274
12-Mar-10	371.68	-9.4	371.68	9.4	381.1	282.4491	98.630904	371.68	282.4491	89.231	7962.15	28.1897
11-Mar-10	304.87	80.33	304.87	80.33	385.2	285.5028	99.69724	304.87	285.5028	19.367	375.09	1.31379
10-Mar-10	364.36	25.39	364.36	25.39	389.8	288.8751	100.87487	364.36	288.8751	75.485	5697.97	19.7247
9-Mar-10	2173.1	-36.68	2173.1	36.68	2210	1637.839	571.93139	2173.1	1637.839	535.25	286494	174.922
8-Mar-10	1132	67.68	1132	67.68	1200	889.1869	310.50307	1132	889.1869	242.82	58963	66.3112
5-Mar-10	913.34	6.2	913.34	6.2	919.5	681.5452	237.99481	913.34	681.5452	231.79	53728.8	78.8339
4-Mar-10	633.81	-41.98	633.81	41.98	675.8	500.8824	174.90757	633.81	500.8824	132.93	17669.7	35.2772
3-Mar-10	959.17	221.72	959.17	221.72	1181	875.2527	305.63726	959.17	875.2527	83.917	7042.11	8.0458
2-Mar-10	1335.3	334.11	1335.3	334.11	1669	1237.349	432.0809	1335.3	1237.349	97.971	9598.3	7.75715

**ROLE OF PANCHAYATS IN RURAL WATER SUPPLY AND SANITATION: A CASE STUDY OF WEST BENGAL**

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**ABSTRACT**

*Safe Drinking Water and Sanitation facilities are the basic components for human development. The state government cannot deny its responsibility to provide safe drinking water and sanitation facilities to the rural people. In this paper an effort has been taken to assess the performance level of the State of West Bengal in providing such basic amenities through effective management of the panchayats. Data analysis reveals that a majority of rural households in West Bengal is under the coverage of safe drinking water. But the provision of sanitation facilities to the rural people in most of the districts is not upto the mark. Moreover, we observe the lack of health consciousness among the rural poor people. This is reflected by their practice of usually non-using sanitation although it is available at the household level. Hence, supply of sanitation materials to the rural people is not the only solution. The proper sanitation lies in its effective management in organizing sanitation drive towards raising the level of social consciousness.*

**KEYWORDS**

Rural Development, Safe Drinking Water, Better Health, Improved Quality Life, Sanitation Facilities, Community Participation, Sanitation Movement, West Bengal Panchayats.

**PROLOGUE**

*My young children, go to all parts of the country, particularly beyond cities, remove the pain of mind and body. Indeed, a health mission is ahead of you”*  
*--- A message from Dr. M.G.R. Medical University, Tamil Nadu*

Safe drinking water and sanitation facilities are important components for human development. These components influence the quality of human health and productivity in many ways. Provision of safe drinking water and sanitation facilities like proper drainage of dirty water, disposal of garbage, sewage, etc. are crucial for maintaining a clean micro-environment. These are considered today as essential prerequisites for good governance to promote better health and welfare of the rural population. In this context it is relevant to quote the former Prime Minister I.K. Gujral who made a revealing remark on the state of our basic amenities, “I see before me bottled water kept for the dignitaries on the dais. It reminds me of three classes of Indians – one who can afford bottled water; others who manage to get some water in their taps or a nearby tap or a pump irrespective of its quality or regularity of supply; the third set of Indians are those for whom drinking water is a daily problem and who will be ready to drink any polluted water.”<sup>1</sup> Herein lies the importance for the provision of safe drinking water and sanitation facilities to the vast Indian populace. This situation requires an integrated approach for comprehensive and sustainable solutions. Primarily, it is the responsibility of the State Government to provide safe drinking water and sanitation facilities to the rural people. However, considering the magnitude of the problems relating to the size of the population, depletion of ground water tables, possibility of contamination, etc. the Central Government had to intervene to supplement the efforts of the State Governments. In this respect, Central Government had also laid emphasis on empowering and capacity building of the Panchayati Raj Institutions (PRIs) and Village Water and Sanitation Committees (VWSCs) to enable them discharge their responsibilities in drinking water supply. The PRIs in West Bengal have taken up the issue of water supply and sanitation as part of rural development as well as good governance. PRIs, since 1990s, are playing a commendable role in implementing different water supply and sanitation schemes sponsored by the central and the state government.

**PURPOSE OF THE STUDY**

The main objective of this study is to assess the efficiency and effectiveness of the state of West Bengal in providing safe drinking water and sanitation facilities to the rural people through the effective management of the panchayat.

**RURAL WATER SUPPLY AND SANITATION: OVERALL OBJECTIVES**

The main objectives of safe drinking water supply and sanitation are as follows:

1. To ensure coverage of all rural habitations with access to safe drinking water and sanitation.
2. To ensure sustainability of drinking water systems and sources.
3. To tackle drinking water quality affected habitations.
4. To institutionalize the reform initiatives in the rural drinking water supply and sanitation.
5. To build up the capacity of users for effective community participation.
6. To enhance the performance and productivity levels of water sector professionals.
7. To change the attitude of rural people towards good hygienic practice for better health and economic prosperity.
8. To focus on capacity building of the stakeholders with a paradigm shift from a target based, supply-driven approach to a demand-responsive approach, where users get services they want and are willing to pay for.

**CENTRALLY SPONSORED SCHEMES IN RURAL WATER SUPPLY AND SANITATION**

To this end, Central Government has taken some initiatives through different schemes / programmes and projects from time to time. The Central Government had introduced the Accelerated Rural Water Supply Programme (ARWSP) in 1972-73 to assist the States and Union Territories with 100% grant-in-aid to implement drinking water supply schemes in villages. The aims of the programme were to ensure coverage of all rural habitations with access to safe drinking water, sustainability of drinking water system and sources, etc. Moreover, Central Government adopted scientific and technological approaches through different sub-missions like control of fluorosis, removal of excess iron, conservation of water, and alternative water supply system in arsenic affected areas, etc. It is to be noted that the Central Government approved projects totaling Rs. 100 crore to the State of West Bengal for providing alternative water supply system to 427 villages in six districts in the arsenic affected areas. In 1986, a national programme called Central Rural Sanitation Programme (CRSP) was launched for providing sanitation facilities to all the rural households and changing attitude towards hygienic practice of the rural people. A renewed thrust was given for ensuring total coverage over the entire programme area by launching the Total Sanitation Campaign (TSC) project in the year 2000-2001. Families in rural areas below the poverty line are eligible for taking up Individual Sanitary Latrines (ISLs) under the TSC programme of the Central Government.

<sup>1</sup> Quoted by A.P.J. Abdul Kalam, The Hon'ble President of India, in the book written by himself Y.S. Rajan, Co-author, India 2020: A Vision for the New Millennium, Penguin books, New Delhi, 1998, p-217.

In 1994, a National Human Resource Development Programme (NHRDP) was launched by the Central Government. Its primary focus is to build-up the capacity of users for effective community participation and also enhancing the performance and productivity levels of water sector professionals. In April, 1999, the Ministry of Rural Development (MORD), Government of India had introduced the Sectoral Reforms Project (SRP) in Rural Water Supply and Sanitation (RWS&S) programme with the aim to replace the government oriented, centralized supply-driven RWS&S by a people-centric, decentralized demand-driven and community-based programme. Consequently, the role of the Government in RWS&S has shifted from that of 'providers' to 'facilitators'. The Sectoral Reforms Project initiative was scaled up throughout the country by launching *Swajaldhara* in December 2002. Almost all the States, including West Bengal, across the country are now implementing the *Swajaldhara* scheme. Moreover, drinking water supply is one of the components of *Bharat Nirman* (BN), which has been conceived as a plan to be implemented within a four-year period (2005-06 to 2008-09) for building rural infrastructure.

**STRATEGY FOR SAFE DRINKING WATER**

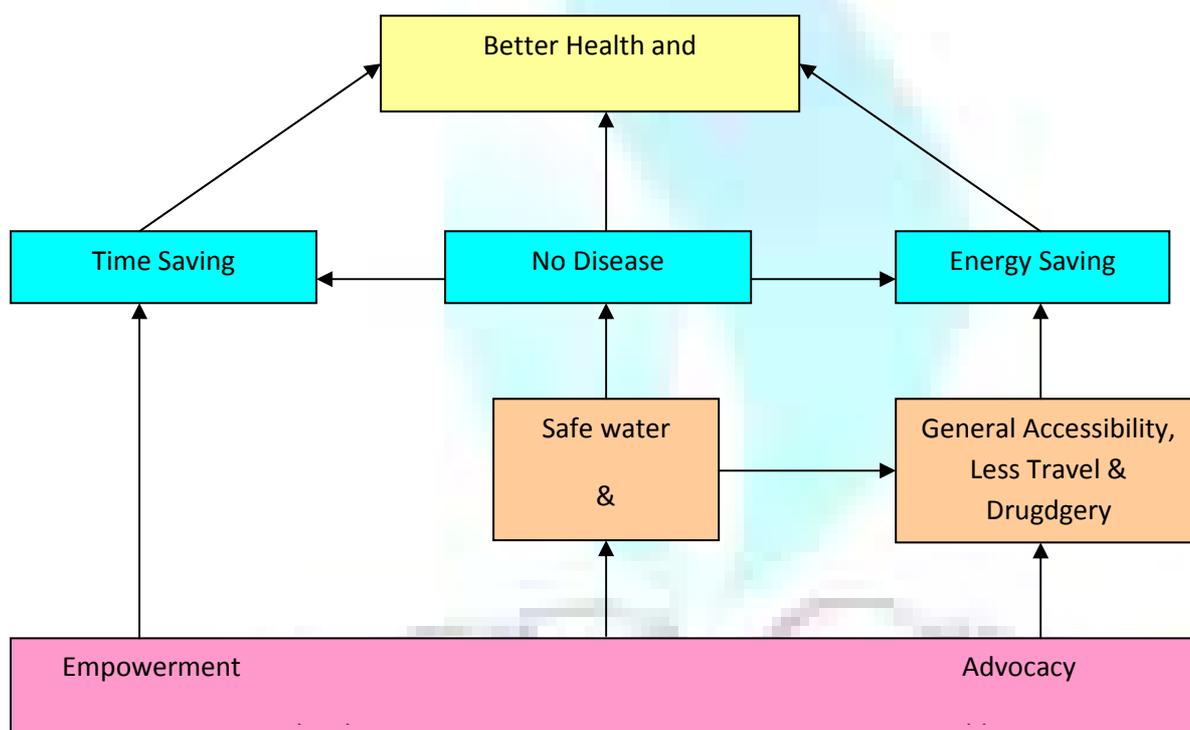
The UNDP and the Government of India had organized a global conference on 'Safe Water 2000' in Delhi in September 1990. The declaration made in that UN General Assembly adopted global conference in November 1990. The four guiding principles<sup>2</sup> adopted in the declaration as strategy for the decade 1990-99 were:

1. Protection of environment and safeguarding of health through integrated management of water resources and liquid/solid waste.
2. Institutional reforms promoting an integrated approach and including changes in procedures, attitudes and behaviour, and the full participation of women at all levels in sector institutions.
3. Community management of services backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes.
4. Sound financial practices achieved through better management practices of existing assets and widespread use of appropriate technologies.

**LINKAGE BETWEEN WATER SUPPLY, SANITATION AND HEALTH**

It has been widely recognized that there is a close association between 'Water Supply & Sanitation' and 'health'. Accessibility of safe drinking water and sanitation facilities determines and influences the quality of human health as well as the incidence and the spread of tropical diseases (like cholera, typhoid, hookworm etc.) Misery, sickness and death due to infectious diseases are known to result from the use of unsafe water and unsanitary goods and services. The relationship between 'Water Supply and Sanitation' and health can be shown in Figure-A below:

**FIGURE-A: WATER SUPPLY, SANITATION AND HEALTH: A RELATIONSHIP FOR ATTAINING IMPROVED QUALITY LIFE**

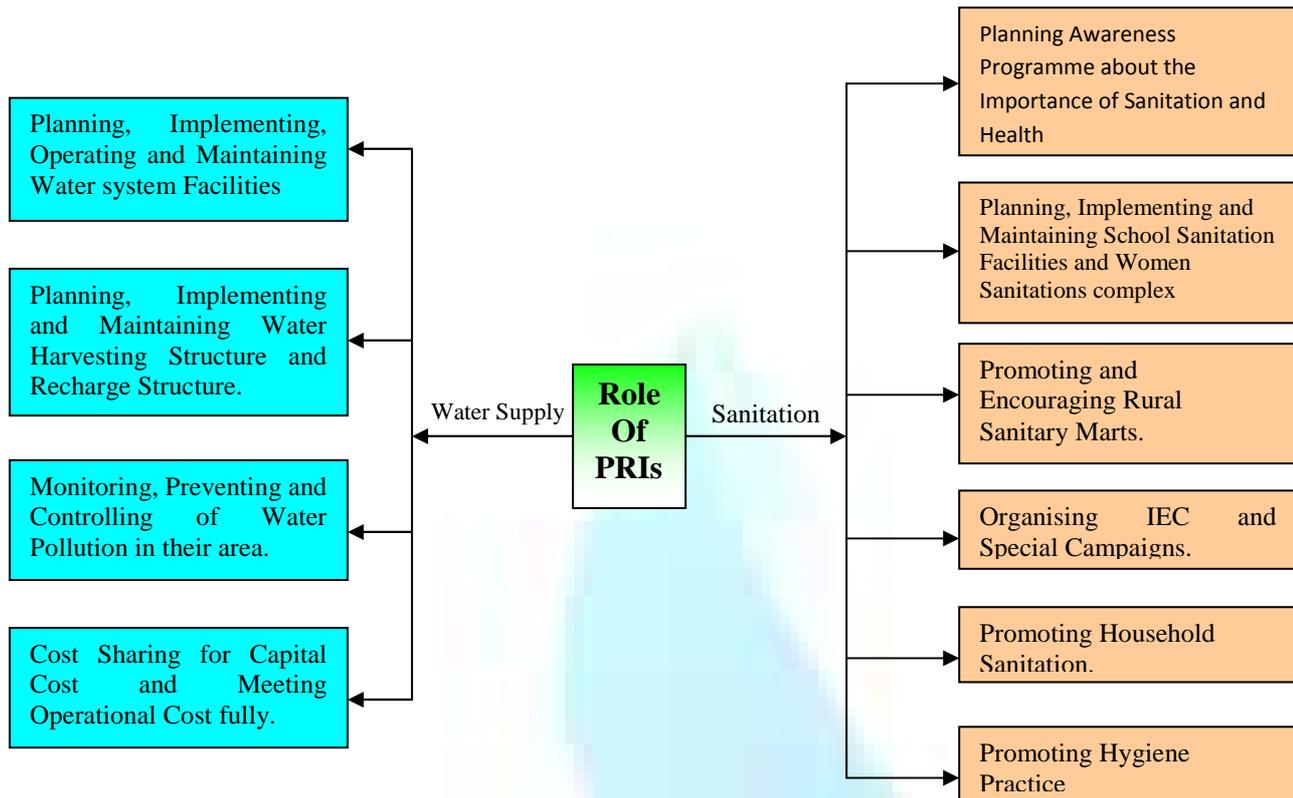


**RURAL WATER SUPPLY AND SANITATION PROGRAMME: ROLE OF PRIS**

Panchayats in different states in India have been doing significant work in the areas of basic minimum services such as safe drinking water, sanitation, primary health care, etc. The PRIs have come forward to be recognized as appropriate units for involving people and enabling them to participate in such activities -- motivating and educating the community, providing safe drinking water and sanitation services, monitoring, evaluation and management. Keeping this in view, 29 development items / subjects including drinking water and sanitation have been listed in the Article 243G of the Eleventh Schedule of the 73<sup>rd</sup> Constitutional Amendment, 1992. Consequently, powers and functions relating to these items have been transferred to PRIs. The operation and maintenance are also the responsibility of the panchayats with the active involvement of the local community and habitations level Water Supply and Sanitation Committee. The day-to-day repairs will be attended to by self-employed mechanics and trained technicians at the habitation level and more complicated repairs at the block level will be undertaken with the help of mobile teams. The role of PRIs in Water Supply and Sanitation Programmes can be shown in Figure-B below:

<sup>2</sup> Das, Palat Mohan (1996); Drinking water: targeting rural India, Kurukshetra, Oct-Nov, p-118.

FIGURE-B: ROLE OF PRIS IN WATER SUPPLY AND SANITATION PROGRAMMES



**IEC INDICATES INFORMATION, EDUCATION AND COMMUNICATION**

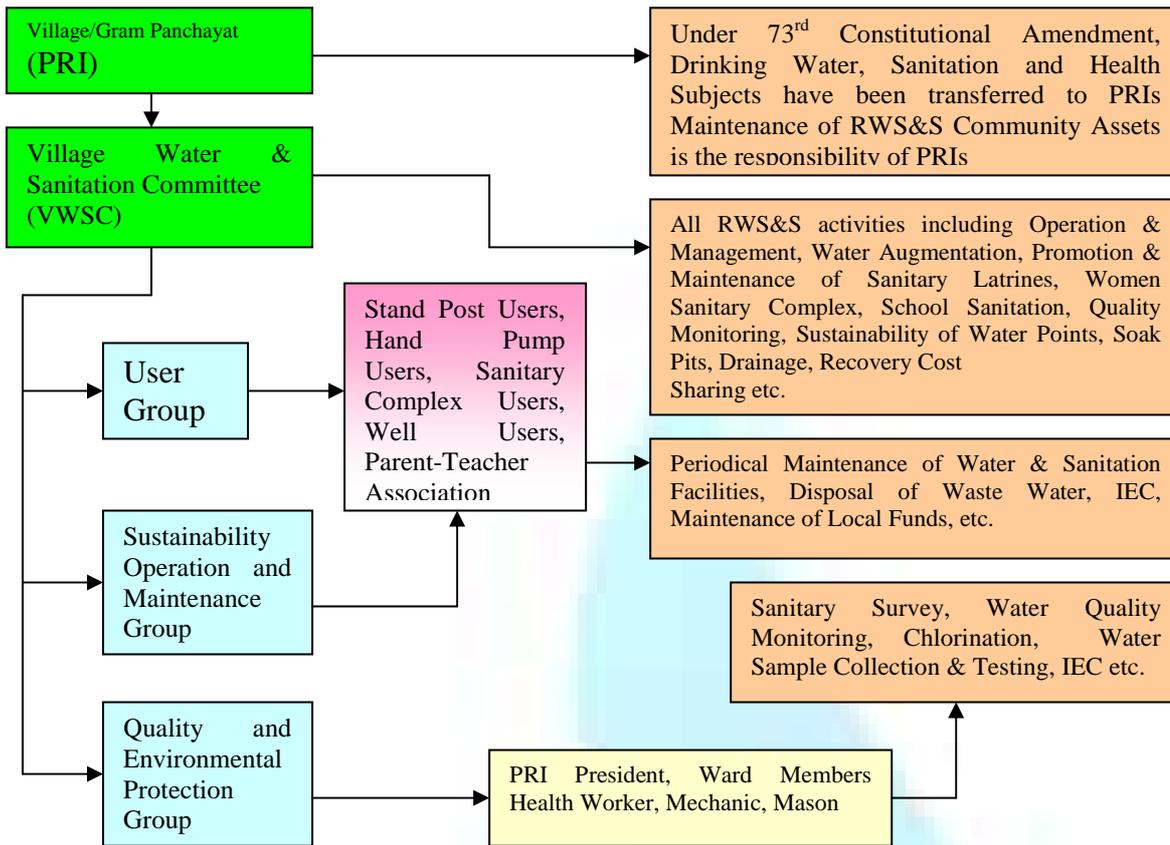
PRI members must be aware of certain basic issues relating to water supply and sanitation. They should be able to analyse the problem, plan and implement different water supply and sanitation schemes in their villages. Moreover, they should understand about the relationship between drinking water, health and hygiene practices to ensure maximum utilization of these assets created for the village community. It is worthwhile to mention that the social audit for the schemes / programmes can help the PRI to assess whether users are satisfied with their services and can ensure the transparency of the schemes / programmes.

**COMMUNITY PARTICIPATION IN RURAL WATER SUPPLY AND SANITATION**

Community Participation is the cornerstone of success of all the Rural Water Supply and Sanitation Projects (RWS&S). It refers to the involvement of the people in a process by which the individual households forming a community (here VWSC), accept RWS & S programmes, take responsibility, identify problems, find solutions and resources to solve their problems so as to become self-reliant. The main functions to be performed by the community to solve their problem are: (i) assessing the local situation, (ii) defining the problem area, (iii) setting the priorities making decisions, (iv) planning action to solve problems, (v) sharing capital and recurring cost of the project, (vi) implementing the project, etc.

A village which wants to utilize TSC funds must form a Village Water and Sanitation Committee (VWSC) comprising members selected from all sections of the community from the village such as residents of each ward, representatives of women and weaker section of the community, ward members, teachers and health workers. The committee should select a chairperson from amongst the VWSC and the Gram Panchayat members. Gram Sabha of the village Panchayats should approve the committee. Some sub-committees may also be formed within the VWSC for different activities. The responsibilities of VWSC, PRIs and users can be illustrated in Figure-C.

FIGURE-C: RESPONSIBILITIES OF VWSC, PRIS AND USERS



**IMPLEMENTATION OF THE SCHEMES FOR RURAL WATER SUPPLY–THE PROCESS INVOLVED**

Panchayat bodies at the block and village levels are the key actors in implementing the schemes in this sector. Hand pumps are the principal source of drinking water. They are community based and installed according to the demand of the inhabitants. A household has access to safe drinking water when it has access to drinking water supplied through pipes and taps or a hand pump / tube well situated within the premises or outside the premises. The Public Health Engineering Department of the State Government is also working in the rural areas for implementing piped-water supply schemes. These schemes are identified by the Zilla Parishad in consultation with the Panchayat Samitis at the block level. Considering the entire process of decentralization as the necessary social pre-requisites of nation building and a means of effective democratic functioning, panchayats will be the suitable vehicle for planning, implementation, maintenance and monitoring this programme. The implementation of any programme is more likely to be effective and successful where the users themselves are in an identifiable group or community with its own authority structure.

**METHODOLOGY**

Relevant data are collected from both primary and secondary sources. Primary data are collected by conducting a village survey through direct interview method using structured questionnaire. Random sampling procedure is used in selecting sample villages as well as sample families. For the purpose of the study, I have visited two gram panchayats – one is in Paschim (West) Midnapore district and other is in Burdwan district in the state of West Bengal to which our study villages belong. For collecting secondary data, I have gone through Statistical Handbook (W.B) 2004, Annual Administrative Report (W.B.) 2004-05, Census Report of India (1981, 1991 & 2001), West Bengal Human Development Report 2004 etc. Simple statistical tools are used to compile, to analyse and to represent the data scientifically.

**RURAL WATER SUPPLY COVERAGE: A CASE STUDY OF WEST BENGAL**

District-wise data relating to the status of rural water supply coverage in West Bengal are presented in Table-1 below:

**TABLE-1: DISTRICTWISE STATUS OF RURAL WATER SUPPLY COVERAGE (AS ON 01-04-2005) IN WEST BENGAL**

Districts	Total No. of Inhabited Habitations	No. of Habitations Not Covered	No. of Habitations Covered	
			Partially Covered	Fully Covered
Cooch Behar	2213	952 (43.02%)	310 (14.01%)	951 (42.97%)
Jalpaiguri	4120	60 (1.46%)	377 (9.15%)	3683 (89.39%)
Darjeeling	2021	805 (39.83%)	634 (31.37%)	582 (28.80%)
Uttar Dinajpur	3667	70 (1.91%)	431 (11.75%)	3166 (86.34%)
Dakshin Dinajpur	4653	86 (1.85%)	102 (2.19%)	4465 (95.96%)
Malda	4151	771 (18.57%)	1498 (36.09%)	1882 (45.34%)
Murshidabad	2965	22 (0.74%)	681 (22.97%)	2262 (76.29%)
Nadia	3885	96 (2.47%)	781 (20.10%)	3008 (77.43%)
North 24 Parganas	6603	14 (0.21%)	2082 (31.53%)	4507 (68.26%)
South 24 Parganas	8475	1216 (14.34%)	3760 (44.37%)	3499 (41.29%)
Howrah	1801	25 (1.39%)	735 (40.81%)	1041 (57.80%)
Hooghly	11160	491 (4.40%)	801 (7.18%)	9868 (88.42%)
Purba Midnapre	5459	810 (14.84%)	2379 (43.58%)	2270 (41.58%)
Paschim Midnapore	15984	378 (2.36%)	1413 (8.84%)	14193 (88.80%)
Bankura	6180	127 (2.06%)	145 (2.35%)	5908 (95.59%)
Purulia	3809	72 (1.89%)	791 (20.77%)	2946 (77.34%)
Burdwan	5069	62 (1.22%)	220 (4.34%)	4787 (94.44%)
Birbhum	3805	47 (1.24%)	378 (9.93%)	3380 (88.83%)
<b>West Bengal</b>	<b>96020</b>	<b>6104 (6.36%)</b>	<b>17518 (18.24%)</b>	<b>72398 (75.40%)</b>

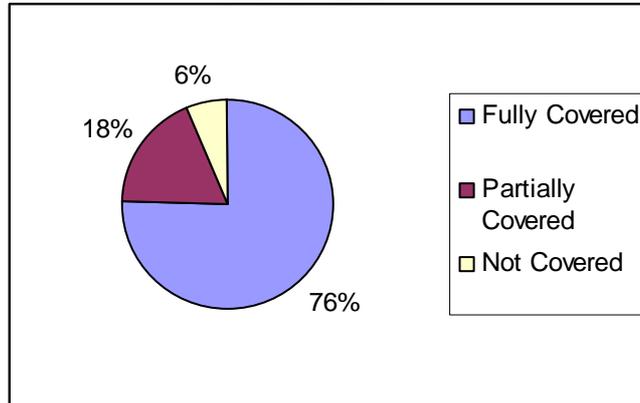
Source: Statistical Handbook (W.B.), 2004, Bureau of Applied Economics and Statistics, Government of West Bengal.

**NORMS FOR FULL COVERAGE HABITATION**

1. One spot source for 250 persons
2. In case of piped water supply 40 litres per capita per day (LPCD) / one public stand post for 250 persons.
3. The drinking water source exists within 1.6 Km. of the habitation in plains / 100 meters elevation in Hilly areas.
4. Quality parameters of drinking water are within the specified limits of habitation survey guidance.

From Table-1 it has been seen that out of six districts in North Bengal, three districts, namely Cooch Behar, Darjeeling and Malda, have less than 50% coverage of drinking water supply. The success rate in the districts of Darjeeling is remarkably low (28.80%). Again in two districts i.e. South 24 Parganas and Purba Midnapore, the habitations with drinking water facilities are about 41% only. But in all other districts of South Bengal, the performance rate in terms of the provision of safe drinking water is satisfactory; the rate is ranging from 58% to 96%. In totality, when the picture of West Bengal is concerned, it is seen that 75.40% of the habitations have full accessibility in drinking water supply. Another 24.60% habitations have either partially covered or not covered at all. The status of rural water supply coverage in the state of West Bengal as on 01-04-2005 can be clarified in figure-D below:

**FIGURE-D: STATUS OF RURAL WATER SUPPLY COVERAGE IN WEST BENGAL AS ON 01-04-2005**



**IMPLEMENTATION OF THE SCHEMES ON SANITATION COVERAGE: THE ACTUAL OPERATIVE MECHANISM**

The rural Sanitation programme in West Bengal is administered by the Department of Panchayats and Rural Development. Truly speaking, only in this programme there is a blending of works by NGOs and the Government. In each block, efforts are being made to set-up a sanitary mart to produce low cost sanitary latrines and accessories on the one hand, and to generate awareness among households regarding the needs to have a sanitary latrine on the other. These sanitary marts are visualized as social marketing outlets where people can request a latrine according to their choice and capacity. Though expanding, they have yet to reach all the blocks.

The year-wise formation of sanitary marts and the coverage of households under this programme are given in Table-2 for the period 1993-94 to 2004-2005.

**TABLE-2: YEARWISE POSITION OF SANITARY MARTS AND HOUSEHOLD COVERAGE UNDER THE RURAL SANITATION PROGRAMME IN WEST BENGAL**

Year	No. of Block Covered by Sanitary Marts	No. of Household Covered	Percentage Change Over the Previous Year
1993-1994	68*	19,565	--
1994-1995	45	36,940	88.80
1995-1996	28	74,761	102.38
1996-1997	23	1,17,053	56.57
1997-1998	17	1,47,072	25.64
1998-1999	17	1,96,737	33.77
1999-2000	42	2,31,678	17.76
2000-2001	21	2,72,567	17.65
2001-2002	27	3,53,605	29.73
2002-2003	28	8,47,094	139.56
2003-2004	8	10,99,732	29.82
2004-2005	8	10,45,318	-4.95
Total	332	44,42,122	--

\* includes 54 sanitary marts in Midnapore which are covered by R.K. Mission.

Source: Annual Administration Report, 2004-05, P & RD Department, Government of West Bengal.

From Table-2 it is found that during the period of twelve years (i.e. from 1993-94 to 2004-05) 332 Blocks have been covered by sanitary marts in the state of West Bengal. The number of households covered during that period was 44,42,122 under rural sanitation programmes undertaken in the state of West Bengal. In Table-2 it is seen that the time series data on the formation of sanitary marts and household coverage show an increasing trend over the period. This trend is clearly shown in Figure-E (1) and E (2) below:

**FIGURE-E (1) & E (2): TREND OF HOUSEHOLD COVERAGE WITH THE FORMATION OF SANITARY MARTS**

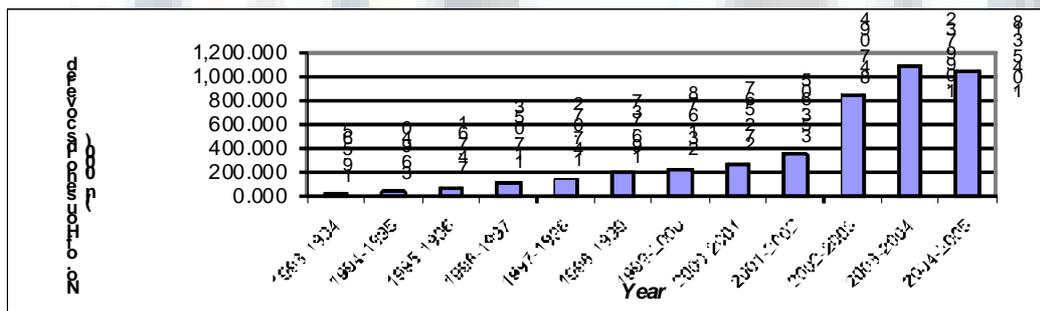


FIGURE-E (1): BAR DIAGRAM DRAWN ON THE BASIS OF THE DATA SHOWN IN TABLE-2

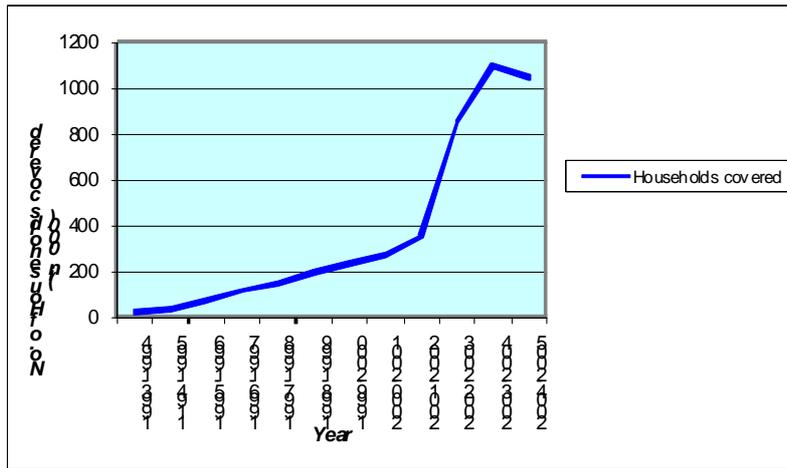


FIGURE E (2): TREND CURVE DRAWN ON THE BASIS OF THE DATA SHOWN IN TABLE-2

From Figure E (1) and E (2) it is found that there is a slow increasing trend in covering households with the formation of sanitary marts from the year 1993-94 to 2001-02. Afterwards, there is a steady increasing trend of the same upto the year 2003-04 and then a declining trend is observed. It will be more clear when we compare the case of West Bengal with other major states of India as shown in Table-3.

The accessibility of safe drinking water in Rural West Bengal as compared to all India average over three-census period is presented in Table-3. From Table-3 it has been found that there is a considerable variation in the accessibility of safe drinking water (in percentage term) to the rural households across the states. West Bengal occupies the second position among the fourteen states in India. From Table-3 it is also found that in rural West Bengal the percentage of households with access to safe drinking water were 65.8%, 80.3% and 87.0% in the year 1981, 1991 and 2001 respectively. The percentage of households with access to safe drinking water for India as a whole were 26.5%, 55.5% and 73.2% in those three census years. Therefore, the data shows that the access to safe drinking water of households in West Bengal as compared to all India average is significantly high over the period. This was possible due to the direct and active role of PRIs and in some cases NGOs and PHE in providing safe drinking water to the rural people.

The comparison of the access to safe drinking water of households between West Bengal and All India average, using the data shown in Table-3, can be represented in figure-F under:

FIGURE-F: COMPARATIVE STUDY OF THE ACCESS TO SAFE DRINKING WATER OF HOUSEHOLDS IN WEST BENGAL AND INDIA (TAP/HANDPUMP/TUBEWELL)

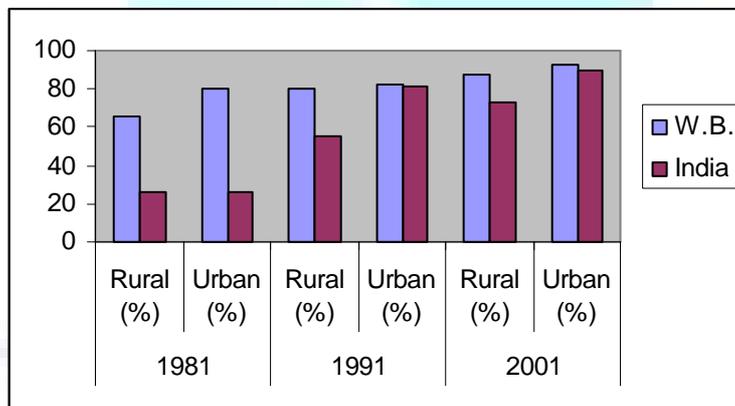


TABLE-3: ACCESS TO SAFE DRINKING WATER OF HOUSEHOLDS IN FOURTEEN MAJOR STATES IN INDIA (TAP / HANDPUMP / TUBEWELL)

States	1981				1991				2001				Rank Totals (Only Rural)	Rank (Lowest to Highest)
	Rural		Urban (%)	Total (%)	Rural		Urban (%)	Total (%)	Rural		Urban (%)	Total (%)		
	%	Rank			%	Rank			%	Rank				
Andhra Pradesh	15.1	10	63.3	25.9	49.0	11	73.8	55.1	76.9	8	90.2	80.1	29	10
Bihar	33.8	5	65.4	37.6	56.5	8	73.4	58.8	86.1	3	91.2	86.6	16	4.5
Gujrat	36.2	4	86.8	52.4	60.0	6	87.2	69.8	76.9	9	95.4	84.1	19	7.5
Haryana	42.9	3	90.7	55.1	67.1	4	93.2	74.3	81.1	6	97.3	86.1	13	3
Karnataka	17.6	9	74.4	33.9	67.3	3	81.4	71.7	80.5	7	92.1	84.6	19	7.5
Kerala	6.3	14	39.7	12.2	12.2	14	38.7	18.9	16.9	14	42.8	23.4	42	14
Madhya Pradesh	8.1	13	66.7	20.2	45.6	12	79.4	53.4	61.5	13	88.6	68.4	38	13
Maharashtra	18.3	8	85.6	42.3	54.0	9	90.5	68.5	68.4	10	95.4	79.8	27	9
Orissa	9.5	12	51.3	14.6	35.3	13	62.8	39.1	62.9	11	72.3	64.2	36	12
Punjab	81.8	1	91.1	84.6	92.1	1	94.2	92.7	96.9	1	98.9	97.6	3	1
Rajasthan	13.0	11	78.7	27.1	50.6	10	86.5	59.0	60.4	12	93.5	68.2	33	11
Tamil Nadu	31.0	6	69.4	43.1	64.3	5	74.2	67.4	85.3	5	85.9	85.6	16	4.5
Uttar Pradesh	25.3	7	73.2	33.8	56.6	7	85.8	62.2	85.5	4	97.2	87.8	18	6
<b>West Bengal</b>	<b>65.8</b>	<b>2</b>	<b>79.8</b>	<b>69.7</b>	<b>80.3</b>	<b>2</b>	<b>82.0</b>	<b>82.0</b>	<b>87.0</b>	<b>2</b>	<b>92.3</b>	<b>88.5</b>	<b>6</b>	<b>2</b>
<i>All India</i>	<i>26.5</i>	<i>--</i>	<i>26.5</i>	<i>75.1</i>	<i>55.5</i>	<i>--</i>	<i>81.4</i>	<i>62.3</i>	<i>73.2</i>	<i>--</i>	<i>90.0</i>	<i>77.9</i>	<i>--</i>	<i>--</i>

Source: Statistical Handbook, 2004 Bureau of Applied Economics and Statistics, Government of West Bengal.

Let us now present a picture on the status of rural households in the districts of West Bengal with latrine facilities. The year-wise data, in percentage term, relating to this aspect is given in Table-4 below:

TABLE-4: DISTRICT WISE PERCENTAGE OF RURAL HOUSEHOLDS WITH LATRINE FACILITIES IN WEST BENGAL

Districts	1991 (in %)	2001 (in %)	Rate of Change (%)
Burdwan	15.32	27.65	80.48
Birbhum	6.79	9.64	41.97
Bankura	3.94	12.86	226.39
Midnapore	4.74	42.60	798.73
Howrah	13.60	47.33	248.01
Hooghly	21.34	33.30	56.04
North 24 Paraganas	28.33	40.30	42.25
South 24 Paraganas	13.70	26.17	91.02
Nadia	22.71	34.78	53.15
Murshidabad	8.36	16.15	93.18
Uttar Dinajpur	6.15	10.00	62.60
Dakshin Dinajpur	6.15	12.84	108.78
Malda	7.84	11.19	42.73
Jalpaiguri	15.43	24.69	72.97
Darjeeling	27.23	34.43	26.44
Cooch Behar	9.69	20.01	106.50
Purulia	3.27	11.14	240.67
<b>West Bengal</b>	<b>12.26</b>	<b>25.97</b>	<b>111.82</b>

Source: Census Report of 1991 and 2001

From Table-4 it is found that percentage of rural households with latrine facilities is remarkably low in almost all districts of West Bengal in 1991. But the situation has been changed remarkably in case of three districts viz. Midnapore, Howrah and North 24 Parganas in 2001. The rate of change between these two periods is remarkable in Midnapore district and the changes in Howrah and Purulia district come next in order.

Thus, we see that most of the families in rural area are outside the latrine facilities at their household level. The situation is scientifically unhygienic and thus undesirable. Herein lies intervention of PRIs to make a breakthrough in changing an age-old practice.

#### SANITATION & DRINKING WATER SUPPLY: VILLAGE STUDY REPORT

As a supportive document, we are now presenting a case study report on safe drinking water availability and sanitation among the villagers. It has already been told that provision of safe drinking water and sanitation is indispensable in the process of integrated development. We have conducted a village survey with 390 families taking 180 families from the district of Midnapore and 210 families from Burdwan. We set the following objectives on which conclusion is required:

1. To identify the percentage of families with sanitation facilities in rural areas.
2. To know whether they receive financial assistance for building sanitation from the local Gram Panchayat / NGO / PHE of the Government of West Bengal.
3. To identify the percentage of families covered with safe drinking water fully.
4. To know about the change of attitude and practice of the households to use their sanitation.

TABLE-5: SANITATION AND DRINKING WATER SUPPLY

Area (Districts Block – GP)	Number of Families	Own Sanitation	Receiving Financial Help from Local GP	Practice to Use Sanitation	Safe-Drinking Water
Paschim Midnapore Garbeta Block-II 8 No. Saraboth GP areas	180	98 (54.44%)	34 (34.69%)	67 (68.37%)	170 (94.44%)
Burdwan, Sadar Block-I Hatgobindapore GP areas	210	151 (71.90%)	42 (27.81%)	136 (90.07%)	207 (98.57%)
Total	390	249 (63.84%)	76 (30.52%)	203 (81.52%)	377 (96.67%)

Source: Own village survey, 2007.

Out of 390 families surveyed 249 families have their own sanitation at the household level. This means that 63.84% families have been covered with sanitation facilities. About 31% families have informed that they have taken financial help from local Gram Panchayat. Although sanitation coverage in rural areas is less satisfactory, the families, which have sanitation arrangement, have the tendency to use as and when required. From Table-5 it is seen that only 19% families do not use sanitation although it is available at their household level. It is also seen that about 97% families have their full accessibility to safe drinking water. It is the responsibility of the Panchayat to make sanitation and supply of drinking water available to those rural people who are still in the list of non-recipients.

## FINDINGS

Our main findings of this study are as follows:

1. There is a considerable variation in the accessibility of safe drinking water to the rural households across the state of W.B.
2. The access to safe drinking water of households in West Bengal as compared to all India average is significantly high over the period under study. This is possible due to the direct and active role of PRIs and in some cases NGOs and PHE in providing safe drinking water to the rural people.
3. Most of the families in rural West Bengal are outside the latrine facilities at their household levels. However, it is observed that the formation of sanitary marts and households coverage show an increasing trend over the years.
4. Some of the sample families do not have the practice of using sanitation though it is available at their household levels. It indicates the lack of health consciousness of the rural population in the one hand and the negligence of PRIs as regards raising the same on the other.

## CONCLUDING REMARKS

From the discussion so far it is clear that the provision of safe drinking water to the rural people is an important task of the Central / State Government / PRIs especially after passing out of 73<sup>rd</sup> Constitutional Amendment in 1992. In the state of West Bengal it is found that 75% to 80% of the habitations have their full accessibility in drinking water supply, either with the direct help of the panchayats, PHE of the state government or with their own arrangements, for which West Bengal can claim a worth-mentioning credit. However, panchayats should take additional initiative to provide safe drinking water to the remaining 20% to 25% habitations through proper planning and execution of the project to achieve cent percent success. The role of the panchayat is more profound in the area of sanitation. From previous analysis of the data relating to sanitation it is found that the formation of sanitary marts and households coverage show an increasing trend over the years under consideration. It is also found that in almost all districts of West Bengal, the percentage of rural households with latrine facilities is remarkably low. Thus, the panchayats have the responsibilities to cover all poor or near poor families with latrine facilities either by giving direct financial assistance to them or by supplying sanitary materials at free of cost or at a subsidized rate. Another important observation is that some of the families do not have the practice of using sanitation though it is available at their households level. It indicates the lack of health consciousness of the rural population. Therefore, panchayats should come forward to build awareness in the minds of the villagers for maintaining better health and improved quality of life. As 30% to 40% villagers are found illiterate till today, they are unable to grasp the importance of using modern sanitation. PRIs can raise consciousness by using different strata of primary education both formal and informal. Only supplying of sanitation materials to the poor villagers cannot solve the age-old problem. It needs to launch a sanitation movement through which programme of scientific sanitation may be a success. PRIs must have an evaluation team to make inspection from time to time to oversee whether sanitation materials supplied to the villagers are properly used.

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## MULTIPROGRAMMING AND REAL TIME SYSTEMS: FUNCTIONAL REQUIREMENTS

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### ABSTRACT

Designing a multiprogramming operating system is still a major consideration for system designers. Multiprogramming operating systems support concurrent execution of tasks, sophisticated form of memory management and file management. These are the basic requirements for a multiprogramming operating system and impose additional penalties on the system. There always exists a trade-off between plenty of capabilities vs. system complexity. Therefore, these contradicting aspects must be carried out carefully. To reduce system complexity and additional overhead, an environment specific multiprogramming system can be designed. Another solution is to design a giant system incorporating almost all capabilities of multiprogramming leaving activation of specific capability on user's choice at system startup time. In this paper all these aspects are deeply discussed in the light of POSIX (Portable Operating System Interface) standard 1003.1 which defines the basic functions of UNIX operating system, its real-time extensions POSIX 1003.1b for prioritized scheduling, enhanced signals, IPC primitives, high-resolution timer, memory locking, synchronized I/O, asynchronous I/O, contiguous files and POSIX 1003.1c for creation of threads and management of their execution. This paper begins with the requirements for a generic multiprogramming operating system and latter concentrates on an environment specific multiprogramming operating system; Real-Time operating system. The processor scheduling, process communication and synchronization mechanisms, event notification and software interrupt and memory management for a real-time operating system are discussed. The functional requirements have been contraindicated.

### KEYWORDS

Interrupt, POSIX, Real-Time System, Synchronization, Virtual Mapping.

### INTRODUCTION

Operating systems are essential components of computer system. It is well known that in lack on software, the computer hardware will have no use. Out of these software's, the operating systems are the most important. If the computer hardware is to be made workable at least one operating system must be installed there. Operating system has greater control over the hardware and it works as an interface between hardware and user's programs. There is a proven requirement of operating system as without it nothing will happen in computer system. Whenever a user performs a task in application software, the application software issues an appropriate system calls. In response of system calls, the operating system enters into the kernel mode to instruct the CPU to execute the instructions. For the user, operating system is private secretary, for processes it traffic controller, for resources it is resource manager. The primary objective of operating system is to increase productivity of processing resources. There is a wide range of tasks carried out by the operating system: -

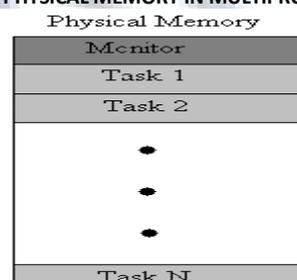
- Operating system provides an easy interface between users and physical computer.
- It controls the execution of programs.
- Operating system loads and schedules user's programs along with necessary compilers when requested by the user.
- Operating system controls the functioning of input and output devices.
- Process scheduling
- Management of physical memory.
- Managing files

### MULTIPROGRAMMING

Multiprogramming has become quite common now-a-days. As the enhancement in hardware, especially in processors, the resource utilization can not be optimized with a single task. Allocating more tasks to CPU lead to better utilization of resources and increased throughput. But multiprogramming has also imposed complexities on operating system. In early days of computing starting from sequential processing and batch processing, the operating systems were very simple. There was little or no processing overheads were associated with these systems. As the hardware upgraded rapidly, researchers moved their attention towards developing systems that can exploit the CPU and give better throughput.

Buffering and spooling improve system performance by overlapping the input, output and computation of a single job, but both have their limitations. A single user can not keep the CPU or I/O devices busy at all times. Multiprogramming offers a more efficient approach to increase system performance. In order to increase resource utilization, systems supporting multiprogramming approach allow more than one job to utilize CPU time at any moment. More number of programs competing for system resources, better will be resource utilization. Many tasks simultaneously reside in physical memory as illustrated in figure 1.

**FIGURE: 1 ALLOCATION OF PHYSICAL MEMORY IN MULTIPROGRAMMING ENVIRONMENT**

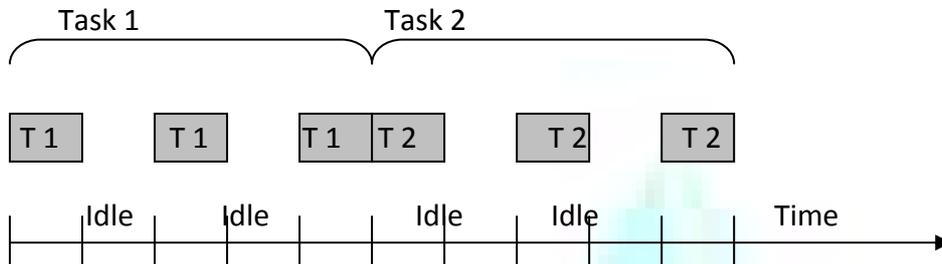


In sequential execution, a single task is executed at a time till its completion. If the task requires some I/O operation to complete, the CPU sits idle during this time leading to poor throughput. In figure two tasks are completed in 10 units of time. Out of 10 units of time CPU works only for 6 units of time giving only 60% of CPU utilization. In multiprogramming as shown in figure, the operating picks one of the tasks and starts execution. During the execution process if task 1 need some I/O operation, the operating system simply switch over to the next task. If there is no task left in physical memory, the CPU will pass its control to the previous task. This helps in improved system performance and resource utilization. However, the turnaround delay for T1 and T2 is equal in both cases (5 units

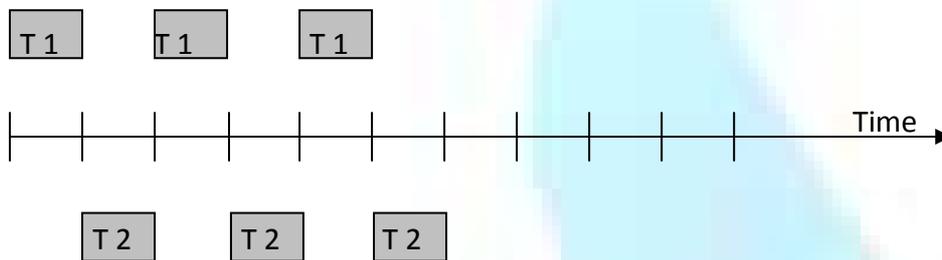
of time); the better throughput is achieved in multiprogramming. As multiprogramming supports concurrent execution of programs, the multiprogramming operating system must be capable to handle four activities: -

- CPU scheduling
- Physical memory management
- Input / Output management
- File management

FIGURE: 2 SEQUENTIAL EXECUTION AND MULTIPROGRAMMING



(a) Sequential execution



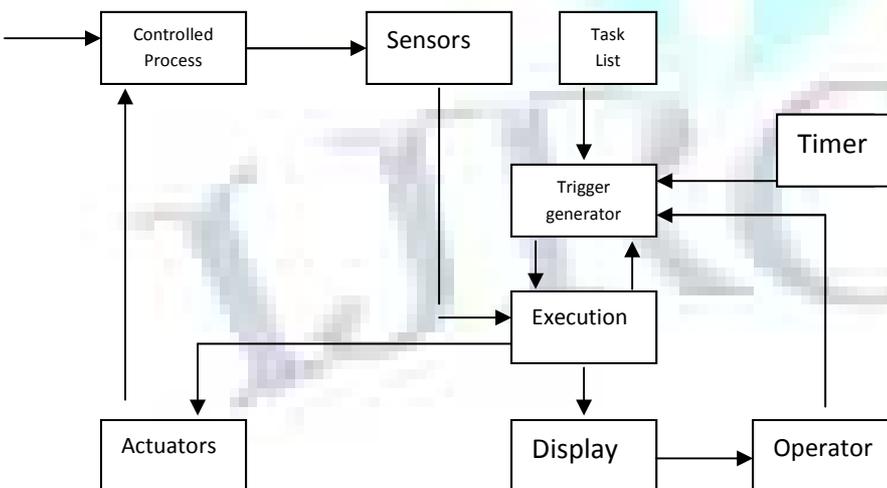
(b) Execution in multiprogramming environment

**REAL-TIME OPERATING SYSTEMS**

Real-time systems are most suitable in the changing environment where large number of external events must be accepted and processed in certain deadline. The primary objective of real-time systems is minimizing event response time. Processor utilization and throughput are secondary concern. In dynamic environment thousands of interrupt may occur in a second. The real-time systems must be capable to process them in short time without missing a single interrupt. The timing constraint of a task in real-time system can be hard or soft depending on whether a rigorous validation of the timing constraint is required or not. The former is hard and the latter is soft. In practice, a hard real-time system invariably has many soft real-time jobs and vice-versa

Figure shows the block diagram of a real-time system. Sensors acquired state of controlled process and operating environment and provide inputs for controller, the real-time computer. There is a fixed set of application tasks. The software for these tasks is preloaded into computer. If the computer has the shared main memory, then the entire software is loaded into that. If it consists of a set of private memories belonging to individual processors, the question arises as to which memories each task should be loaded into. The trigger generator represents the mechanism used to trigger individual task for execution. After execution the output is sent to display and actuators.

FIGURE: 3 BLOCK DIAGRAM OF REAL-TIME SYSTEM



**PROCESSOR SCHEDULING**

The scheduling of tasks to ensure that real-time deadline is met is the central to the objective of a real-time operating system. A may be *periodic* which runs at regular intervals or *sporadic* which invoked at irregular intervals. A scheduling may be offline or online. *Offline* scheduling involves scheduling in advance of the operation, with specifications of when the periodic tasks will be run and slots for the sporadic tasks in the event that they are invoked. In *online* scheduling, the tasks are scheduled as they arrive in the system. *Static-priority* algorithms (RM, for example) are used where priority of a task does not change within a mode.

Dynamic-priority algorithms (EDF, for example) assume that priority of a task can change with time. Scheduling may be *preemptive* if tasks can be suspended from execution due to arrival of higher priority task in the system or *non-preemptive*.

A truly real time operating system must offer at least 32 priority levels which is the minimum number required to be real time operating system. Most real-time operating system offer 128 or 256 priority levels. In real-time systems, one process is charged for handling one event. These processes are mostly explicit, user-defined processes. An interrupt causes the process to wakes-up on occurrence of the related event. The processes are given a priority which signifies the importance of event associated with it and process having higher priority preempts the CPU from lower priority process. So the process with highest priority is executed first. When priority levels of two threads are equal, FIFO or Round-Robin scheduling can be opted. To control the custom, *priority based preemptive scheduling* is used in most of the real-time system.

A lower priority may be blocked by higher priority process. If this situation is intolerable, a technique called *aging* is applied. This enforces gradually increment of process priority when the process spends a certain amount of time in the system. This scheduling can be further refined into *earliest-deadline first* (EDF) scheduling in hard real-time systems which guarantees the execution of time-critical processes before expiration of deadline.

#### PROCESS COMMUNICATION AND SYNCHRONIZATION MECHANISMS

In multiprogramming system, the concurrently executing processes must communicate and synchronize in order to cooperate to each other. Interprocess communication is based on the use of *shared variables* or *message passing*. Processes synchronize using mutexes, reader/writer locks, condition variables and semaphores. Processes that are working together often share some common storage that one can read and write. Each process has a segment of code called critical section that access shared memory. The key issue involving shared memory is to find way to prohibit more than one process from reading and writing the shared data at the same time. Some way of making sure that if one process is executing in its critical section, the other process will be excluded from doing the same thing. This requirement is called **mutual exclusion**. The Dutch mathematician *Dekker* is believed to be the first to solve the mutual exclusion problem. But his original algorithm works only for two processes. It can not solve all the problems of mutual exclusion.

#### MODULE MUTEX

```

var P1busy, P2busy: boolean;
Process P1;
begin
    while true do
        begin
            P1busy:=true;
            while P2busy do {keptesting};
            critical_section;
            P1busy:=false;
            rest_P1_processing;
        end{while}
    end; (P1)
Process P2;
begin
    while true do
        begin
            P2busy:=true;
            while P1busy do {keptesting};
            critical_section;
            P2busy:=false;
            rest_P2_processing;
        end{while}
    end; (P2)
{parent process}
begin{mutex}
    P1busy:=false;
    P2busy:=false;
    initiate P1, P2;
end{mutex}

```

#### ALGORITHM: 1 MUTUAL EXCLUSION

A synchronization tool called semaphore is used solve mutual exclusion problem. A semaphore is a variable which accepts non negative integer values and except for initialization may be accessed and manipulated through two primitive operations – *wait* and *signal* and implemented as system calls or as built-in functions. The two primitives take only arguments as the semaphore variables, and defined as:

```

wait(S)
    While S <= 0 do {keptesting} S:=S-1;
signal(S)
    S:=S+1;

```

Keeping critical section between these two primitive operations, mutual exclusion can be achieved.

```

wait(S)
{critical_section};
signal(S)

```

#### Module sem\_mutex

```

var bsem: semaphore; {binary semaphore};
Process P1
begin
    while true do
        wait(bsem)
        critical_section;
        signal(bsem)
        rest_P1_processing;
    end (while)
end; (P1)

```

```

Process P2
  begin
    while true do
      wait(bsem)
      critical_section;
      signal(bsem)
      rest_P2_processing;
    end {while};
end; (P2)
.
.
.
Process n
  begin
    while true do
      wait(bsem)
      critical_section;
      signal(bsem)
      rest_Pn_processing;
    end {while}
end; (Pn)
{parent process}
  begin {sem_mutex}
  bsem:=1 {free}
  initiate P1, P2, ..., Pn
end; {mutex}

```

#### ALGORITHM 2: MUTUAL EXCLUSION WITH BINARY SEMAPHORE

Modification to the integer value of the semaphore in the wait and signal operations are executed individually. Therefore any number of concurrently executing process can be mutually excluded from executing their critical section at the same time.

#### EVENT NOTIFICATION AND SOFTWARE INTERRUPT

Event notification, exception handling and software interrupts are the essential requirements of multiprogramming systems. Responsive mechanisms are needed to inform threads of the occurrence of timer events, the receipt of messages, and the completion of asynchronous I/O and so on. Real-time POSIX improves predictability in interprocess communication by providing the application with control over message passing. A real-time POSIX messages are prioritized just like threads and they can be dequeued in priority order. Send and receive are nonblocking. Moreover, receive notification makes it unnecessary for a receiver to check for the arrival of a message to an empty queue.

In multiprogramming system, interrupt handler and kernel use signals as a means to inform threads of the occurrence of exceptions or waited for events. Signals are primarily for event notification and software interrupt. POSIX provides only two application defined signals. POSIX signals are delivered in FIFO order, and are not queued, and can not pass data. A thread signals another thread to synchronize and communicate. A Real-Time POSIX compliant system provides at least eight application defined signals. The Real-Time POSIX extensions signals are characterize by: -

- Eight signals are there in real-time POSIX extensions. These signals are numbered from SIGRTMIN to SIGRTMAX.
- Real-Time POSIX extensions signals can be queued.
- A queued real time signal can carry data.
- Queued signals are prioritized.
- POSIX real-time extensions provide a new and more responsive synchronous signal-wait function called *sigwaitinfo*.

#### MEMORY MANAGEMENT

Because main memory is much more expensive, per bit than disk memory, it is usually economical to provide most of the memory requirements of a computer system as disk memory. Disk memory is also "permanent" and not (very) susceptible to such things as power failure. Data, and executable programs, are brought into memory, or *swapped* as they are needed by the CPU in much the same way as instructions and data are brought into the cache. Most large systems today implement this "memory management" using a hardware memory controller in combination with the operating system software.

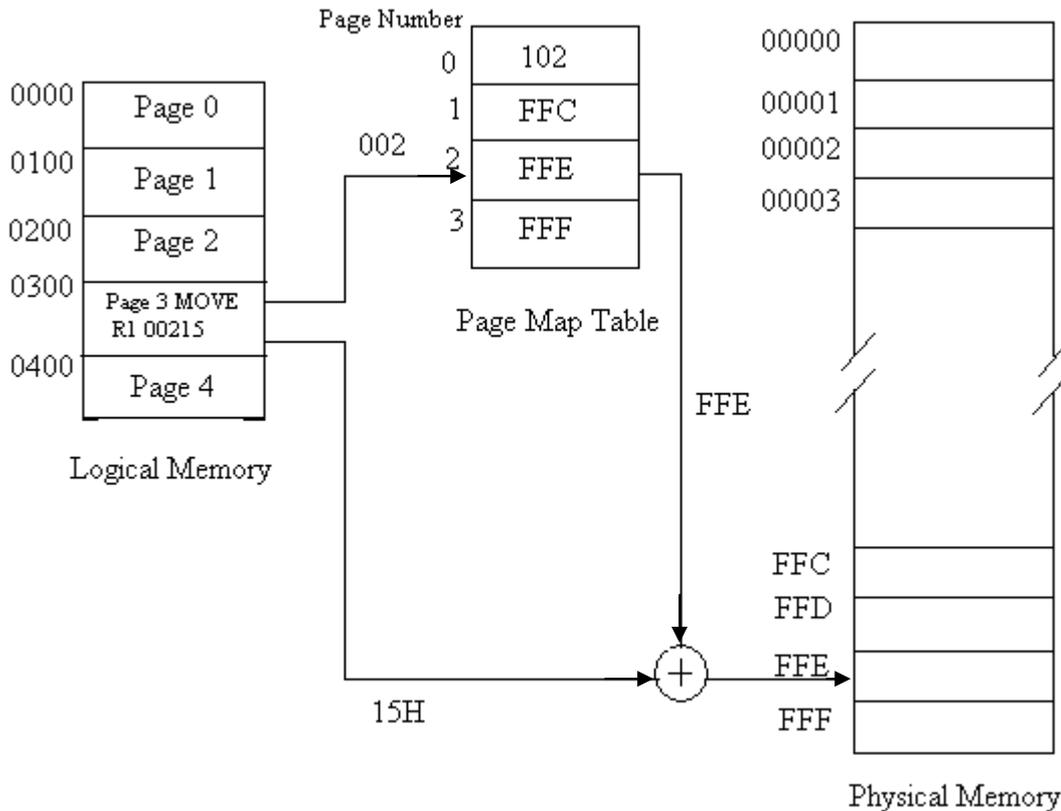
In a computer system which supports virtual memory management, the computer appears to the programmer to have its address space limited only by the addressing range of the computer, not by the amount of memory which is physically connected to the computer as main memory. In fact, *each process* appears to have available the full memory resources of the system. Processes can occupy the same virtual memory but be mapped into completely different physical memory locations. Of course, the parts of a program and data which are actually being executed must lie in main memory and there must be some way in which the "virtual address" is translated into the actual physical address in which the instructions and data are placed in main memory. The process of translating, or mapping, a virtual address into a physical address is called *virtual address translation*.

In real-time system most of the processes permanently reside in physical memory. Therefore memory management in real-time system is less demanding. There is little or no need to moving processes from physical memory to secondary storage. Swapping of processes is rarely done. This reduces considerable overhead of memory manger. But all multiprogramming capabilities must be considered if circumstances warrant so. A real-time system may support virtual memory mapping and paging or none of these. Real-time systems designed primarily for embedded real-time applications such as data acquisition, signal processing and monitoring may not support virtual memory mapping.

Fragmentation of memory is a potential problem for a system that does not support virtual mapping. After allocation of variable size segments, large fraction of individual blocks may be unused. The available space may not contiguous or contiguous area in memory may not enough to meet the application's buffer demand. These all cases lead to wastage of memory. Virtual address mapping impose additional penalty on the system in terms of *address translation table* which must be maintained. *Address translation table* further complicates DMA-controlled I/O.

Given a physical memory of 1 MB where virtual and physical address is 20 bits long each. The page size is assumed to be 256 bytes. The physical memory will have maximum of (1 MB / 256 bytes) 12 frames (pages) of 256 bytes each. The corresponding virtual to physical mapping is given in *figure*.

FIGURE: 4 VIRTUAL TO PHYSICAL MAPPING



A real-time operating system may support paging so that memory demanding application such as editors, debuggers needed during development can run together with target real-time applications. Such system must have some means to control paging otherwise the system goes to thrashing. Real-time POSIX compliant systems support shared memory in addition to file mapping. In such a system, a process can create a shared memory object that is accessible by other processes. Shared memory must be protected so that a process can not manipulate the address space of another process. For this purpose, *mlockall* and *mlock* functions are provided in real-time extension of POSIX. The former is used to lock the entire memory; the latter is used to lock the specified range of address space of a process in memory.

## CONCLUSION

To increase resource utilization and system throughput, an operating system must incorporate multiprogramming capabilities. But the fact is, adding all multiprogramming capabilities to a single operating system make it complex. Therefore environment specific multiprogramming operating systems are preferred. The most demanding features are highlighted and other things are compromised. Increasing throughput and minimizing response delay to achieve optimized performance is still a problem in most of the multiprogramming system.

To schedule varying priorities of tasks, a combination of schedulers are used to meet the real-time deadline, to minimize response delay and to maintain system throughput. Processes in multiprogramming operating system must communicate and synchronize accordingly using semaphores, mutexes and condition variables. These synchronization tools have their own limitations. In hard real-time systems, too many interrupts generate frequently and no single interrupt can be missed. To control the custom, an effective scheduling is required. Virtual mapping must be supported by multiprogramming systems to increase the degree of multiprogramming. However, virtual mapping increases run-time overhead.

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## A JOURNEY FROM CONSUMER SATISFACTION TO CONSUMER DELIGHT: CASE STUDY OF AN INDIAN PRIVATE SECTOR BANK

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### ABSTRACT

*The banking industry in India has witnessed a rapid growth coupled with intense competition. The forces of economic change, coupled with advancements in technology prompt banks to rethink their use of traditional ways and begin thinking of devising ways in which they can not only satisfy rather delight their customers. Capturing and keeping a customer is a great challenge. The marketer is faced with a challenge as to how to create a service package, which wins over the customers and assures their loyalty. This can only be done when the marketer is armed with the knowledge of what satisfies and delights the customer. The present study is a case study which focuses on the journey from consumer satisfaction to consumer and how far have they been successful in reaching their goals.*

### KEYWORDS

Banking industry, service package, economic change, delights.

### INTRODUCTION

Banking sector is the backbone of any financial system and economy (Dutta and Dutta, 2009). Indian commercial banks have undergone reforms since the 1990's. This sector has witnessed a rapid technological deployment, intense price wars almost leading to commoditization of the sector, product innovations, public sector losing their market share to private banks and ultimately an intense competition to win over the customers. The rapidly changing environment is compelling the attention of all banking institutions to lay emphasis on service quality and customer satisfaction (Angur et.al., 1991). It was established that building closer relationships with customers resulted in better returns to companies (Reichheld, 1993). It is not only dissatisfaction inflicted by the marketers which prompt customers to shift their patronage but also the new competitive market which makes the switching easier. The catalyst is the product or service commonality or parity (Verma, 2000). However despite the considerable service quality related literature and in spite of the tremendous market potential afforded, there is a comparative dearth of studies related to developing economies (Sureshchander et.al., 2003). However in the current scenario it is cliché to discuss about customer satisfaction. It was established that building closer relationships with customers resulted in better returns to companies (Reichheld, 1993). It is not only dissatisfaction inflicted by the marketers which prompt customers to shift their patronage but also the new competitive market which makes the switching easier. Customers have a range of satisfaction referred to as a zone of tolerance. It is believed that moving satisfaction beyond the upper threshold of this zone of tolerance may produce exceptional results. This level of customer satisfaction is termed as customer delight.

### LITERATURE REVIEW

Delight is a resultant feeling of how customers are treated or dealt with in a service delivery process. In other words it is about how service provider handles the customer's needs of security, justice and self-esteem (Schneider and Bowen, 1990). The limited research available on service delight has tended to apply the limited techniques available to developing countries. However the application of methods designed in one country may not be entirely appropriate for another, due to varying environmental conditions (Reynolds, 2000). Moreover they are likely to be even less applicable to developing regions where disparities will be even greater (Davis and Young, 2002).

Unfortunately there is no commonly accepted scale to measure customer delight. Some studies have determined the emotional responses associated with delight to suggest an appropriate name for an emotion/feeling produced by a mixture of emotions. One study used four emotional adjectives: exhilarated, thrilled, delighted and exuberant to measure delight on a five point scale ranging from very little to very much (Kumar, 2001). Others have used critical incident technique where respondents were asked to describe absolutely, positively delightful experiences (Arnold et.al., 2003). These were labeled by the researchers as delight. Studies have discovered that a dissatisfied customer would positively switch supplier but a satisfied customer may also switch because he or she tends to be indifferent, holding no special preference or commitment to the provider of service (Jones and Sasser, 1995). The customer needs to be pushed to a zone of delight. It is a state where customer feels happy or elated at the service provision, which drives his or commitment and loyalty. Thus key lies in doing what delights and avoiding what offends the customer (Verma, 2003). According to two management consultants "the key to creating a memorable service .... Is to create conditions and do things that are unexpected, unpredictable, valuable, memorable and reproducible" (Bell and Zemke, 2003). Another analyst uses the term "positively outrageous service" for customer delight that he refers to as unexpected, random, extraordinary and disproportionately positive (Gross, 1991). The major difference between satisfaction and delight is the element of surprise. In delightful experience the product's performance, value, variety, purchase experience, and after sales support are outside the buyer's expectation set. Identifying areas of no expectations is an important stage in an organizations strategy of customer delight.

**OBJECTIVES**

1. To study customer perception in terms of the variables selected for study.
2. To study the relationship between Service Quality, Customer Delight and Behavioral responses in the chosen Bank.

**METHODOLOGY**

The present research attempts to add to the limited understanding of consumer perceptions of bank service quality in India and what factors are important to delight customers.

**EXPLORATORY RESEARCH**

Exploratory research was conducted to identify the key service dimensions important to Indian customers. Initial research comprised of a literature review, qualitative research as well as piloting the survey instrument amongst consumers. These are exploratory activities recommended in other service quality studies.(Chu,2002; Davis and young,2002; Imrie et.al.,2002; Sureshchandar et.al.,2003). For the qualitative research a series of focus groups were conducted with customers of the ICICI Bank operating at Jaipur district. All participants had visited their regular branch at least once in the previous month and held both savings and current accounts. Groups contained both men and women and were divided into younger and older categories; 25-35 years and over 35 years.

**QUANTITATIVE PHASE**

From the exploratory phase 10 service attributes were identified for inclusion in the Questionnaire. An appropriate scale was considered for designing the questionnaire. A frequent problem with satisfaction scales is a skewed distribution of responses with an inordinate number of responses at the most favorable end of the scale. Hence a scale weighted to the lower extreme was chosen. The scale selected was a five point negatively biased Likert scale: very satisfied, satisfied, somewhat dissatisfied, dissatisfied and very dissatisfied. Piloting revealed that respondents had no difficulty rating dimensions using the scales. Questionnaires were interviewer -administered in bank branches. Face to face interviewing was deemed the most appropriate method, given the questionnaire’s length.

**SAMPLING DESIGN**

The formulae calculating required sample size of infinite population is as follows:

$$N = \frac{Z^2 \cdot P \cdot Q}{B^2}$$

$$= \frac{.078 \times .933 \times 1.96^2}{.05^2}$$

$$= 98$$

Where n= sample size, B = allowable error (precision)

Z= Z score based on desired level of confidence, Q= 1-P

Based on the formula, the required sample size is approximately 98.The approximate sample was 100 taken for the study. This sample size cumulates sampled customers of ICICI Bank. The questionnaires will be distributed to the individuals at selected branches.

**RESEARCH VARIABLES**

S.No.	Variables	Sub -Factors
1	Tangibles	Appearance of physical facilities Appearance of service personnel Visual appeal of physical facilities and service personnel
2	Reliability	Performing services as promised Dependability of service personnel in solving Dependability of automated service equipment Accuracy of service Consistency of service
3	Responsiveness	Prompt service Helpfulness of service personnel Readiness of service
4	Assurance	Competence and Knowledge of service personnel Courtesy of service personnel Credibility and security of service personnel
5	Empathy	Personalized attention Appropriateness of service hours Understanding customers Good communication
6	Price	Fee fairness Perceptual differences in price Worthiness of service value
7	Differentiation	Option value Benefit value Suitability of services relative to competitors Promptness of services relative to competitors Credibility and corporate image differences relative to competitors

**DATA ANALYSIS AND RESEARCH RESULTS**

This section deals with the results analyzed to study the difference in consumer propensity to recommend and switching intentions once they are satisfied and delighted with the services offered by the bank. The initial interviews revealed that 25 % of customers expressed they were “very satisfied” (the top category

level of satisfaction on five point scale), 34% expressed themselves as satisfied, 50% described themselves as somewhat to very dissatisfied overall. The sample consists of mostly males (73%) and females (27%). Majority of the respondents were more than 30 years of age (78%). About 38% of the sample earned a salary of 10000 a month. Most respondents have achieved at least a University degree/Bachelor degree (42%). There are more respondents who were married (72.3%). Around 40.5% of the respondents were employed in Private Organizations. As a whole the sample is skewed towards a more educated segment of the population.

The correlation analysis of the customer satisfaction and delight and propensity to recommend and switching intentions revealed that higher propensity to recommend was present when the customer was delighted rather than satisfied. The switching intentions were higher in case of a satisfied customer rather than a delighted customer.

**TABLE 1: CUSTOMER'S PERCEPTION ON SERVICE QUALITY DIMENSIONS**

Service Quality Dimension	Very satisfied	Satisfied	Somewhat dissatisfied	Dissatisfied	Very dissatisfied
Tangibles	30	35	10	15	10
Reliability	25	30	20	20	5
Responsiveness	26	16	20	30	8
Assurance	23	17	18	23	19
Empathy	18	17	20	30	15
Price	20	35	15	18	12
Differentiation	26	32	12	20	10
Communication	31	26	15	20	8
Credibility	18	12	35	25	10
Security	35	24	20	15	6
<b>Mean</b>	25.2	24.4	18.5	21.6	10.3

**TABLE 2: CUSTOMER RANKING OF SERVICE QUALITY DIMENSIONS:**

Service Quality Dimension Ranking
1. Empathy
2. Responsiveness
3. Communication
4. Price
5. Credibility
6. Reliability
7. Differentiation
8. Tangibles
9. Assurance
10. Security

**TABLE 3 CORRELATION ANALYSES: CUSTOMER DELIGHT, PROPENSITY TO RECOMMEND AND SWITCHING INTENTIONS**

Private Sector Bank	Customer Delight	Propensity to recommend	Switching Intentions
Customer Delight	<b>1.00</b>		
Propensity to recommend	<b>0.943</b>	<b>1.00</b>	
Switching Intentions	<b>.380</b>	<b>.056</b>	<b>1.00</b>

**TABLE 4: CORRELATION ANALYSIS: CUSTOMER SATISFACTION, PROPENSITY TO RECOMMEND AND SWITCHING INTENTIONS**

Private Sector Bank	Customer Satisfaction	Propensity to recommend	Switching Intentions
Customer Satisfaction	<b>1.00</b>		
Propensity to recommend	<b>0.889</b>	<b>1.00</b>	
Switching Intentions	<b>.956</b>	<b>.716</b>	<b>1.00</b>

**CONCLUSIONS AND RECOMMENDATIONS**

Several managerial implications emerge from this study. The results indicate that there is higher propensity to recommend (.943) in case of customer delight as compared to customer satisfaction. In case of customer satisfaction the propensity to recommend was .889 which was lower than that of customer delight. The switching intentions were found to be higher in case of customer satisfaction (.956) than in case of customer delight (.380). While the findings and guidelines offered in this study hold promise, they should not be viewed as panacea. The ultimate success of any quality program implemented by bank can duly be ganged by creation and retention of delighted customers. Hence banks should not ignore the specific needs of their customer contact employees such as motivation factors, factors leading to satisfaction and customer delight. The results also suggested that the dimensions corresponding to Empathy, Responsiveness Communication Price Credibility and Reliability are also significant in determining the overall customer satisfaction and delight and inducing positive behavioral outcomes by reducing negative impacts. This suggests that giving prompt services to the customers exactly when the service will be performed; if there is a problem, the willingness of the bank to discuss with the customer; and readiness of the employees to help and respond to the requests is likely to have an important and positive effect on consumer satisfaction and delight. Therefore in their efforts to deliver high quality services to their customer's banks should not ignore the specific basic needs of their customers and the service points where they can actually deliver delight to them.

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## MODELING NIFTY VOLATILITY USING GARCH

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### ABSTRACT

Statistical volatility of an asset during a period is defined as the variance of asset returns over that period. Unlike price of an asset, volatility is not directly observable. Moreover the volatility of an equity or an index can vary with time. Consequently modeling volatility of an equity or an index is a challenging problem. Accurate assessment of volatility of an index or an equity is important for option pricing and portfolio management. In this paper we measure the volatility of S&P CNX NIFTY, the leading Indian benchmark Index, during the period 1st April 2001 to 31st March 2011. Robert Engle introduced the idea of modeling time varying volatility by introducing the concept autoregressive conditional heteroscedasticity (ARCH). An advanced version of this model is the generalized ARCH or GARCH model. We use GARCH model to estimate the volatility in the daily NIFTY returns during the last ten financial years, during which the Indian and global equity markets witnessed great fluctuations. The fitted GARCH model reveals that during the last ten financial years the most volatile period seems to be from 1<sup>st</sup> week of June 2006 to 1<sup>st</sup> week of November 2008. Volatility in NIFTY daily returns seems to have increased drastically since June 2006.

### KEYWORDS

NIFTY volatility estimation, GARCH, Time varying volatility, autocorrelation function.

### INTRODUCTION

Measuring volatility of asset returns is an important problem in finance. For instance, option-pricing formulae express prices of options and other derivative instruments in terms of volatility of the underlying asset. In Portfolio-choice theory, optimal portfolios are derived as functions of variances and covariances of asset returns. Financial economists have long since known that volatility in returns tends to cluster (i.e. a high price movements are likely to be followed by high price movements) and that in any share or commodity market there are highly volatile as well as passive phases. Even though the time varying nature of volatility of financial assets was known to many researchers, but until 1980s researchers used models in which volatility was assumed constant over time. For example, Mandelbrot (1963), Mandelbrot and Taylor (1967) used so-called stable Paretian models to characterize the return distributions.

Engle (1982) introduced the assumption that the conditional variance of the residual component in a time series model is time-varying. In simple terms, Engle assumed that a large error is likely to be followed by another large error and a small error by a small error. This revolutionary concept made it possible to explain systematic features in the movements of variance over time. Economists believe that volatility of an index can be explained by the weak form of efficient market hypothesis. A stock market index is said to be weak form efficient (see Sharma and Chander (2011)) if it is not possible to forecast future returns by studying past returns. To be precise efficient market hypothesis assumes that the successive daily returns of a market index are stationary (exhibiting constant mean) and are not correlated.

Let  $R_t = \text{Log}(P_t/P_{t-1})$ , where  $P_{t-1}, P_t$  denote the price of a market index at times  $t-1$  and  $t$ . Then efficient market hypothesis implies that  $\{R_t\}$  is a white noise process, exhibiting no auto-correlation. However it is well known that returns on any equity or index tend to have periods of high volatility clustered together.

Using Engle's idea of capturing time varying volatility, an appropriate model for  $R_t$  seems to be

$$R_t = \mu + y_t, \text{ where } y_t = \sigma_t z_t \text{ and } \sigma_t^2 = \alpha_0 + \sum_{i=1}^m \alpha_i y_{t-i}^2$$

$\{z_t\}$  is a sequence of pure white noise or independent and identically distributed random variables with mean zero and variance 1. The coefficients  $\alpha_i, i = 0, 1, 2, \dots$  are non negative.  $\sigma_t^2$  represents the volatility at time  $t$ . This model is known as the ARCH (m) model (see Rajan (2011)). Since volatility is persistent in financial markets, it is observed that an appropriate value of "m" can be very large. This increases the computational cost involved in estimation of the model parameters.

To overcome this difficulty a generalization of the ARCH model was proposed (see Bollerslev (1986))

which is defined as follows

$$R_t = \mu + y_t, \text{ where } y_t = \sigma_t z_t \text{ and } \sigma_t^2 = \alpha_0 + \sum_{i=1}^p \alpha_i y_{t-i}^2 + \sum_{i=1}^q b_i \sigma_{t-i}^2$$

The above model is known as generalized ARCH or GARCH (p,q) model.

The last ten financial years, viz from 1st April 2001 to 31st March 2011, has been very eventful and volatile for Indian equity market. During this period the national stock exchange (NSE) in India have taken a number of steps to improve the share market microstructure in India. As a result the NSE has gradually evolved into an efficient market (see Dutta (2011)). Dutta (2011) observed that the S&P CNX NIFTY daily returns, during the last ten financial years, exhibit time varying volatility. Consequently GARCH seems to be a suitable model for modeling the volatility in NIFTY daily returns.

### OBJECTIVE

In this paper we fit the above mentioned GARCH model to estimate and visualize the volatility in daily returns of S&P CNX NIFTY index, during 1st April 2001 to 31st March 2011. We analyze how the volatility in NIFTY daily returns have changed over the last ten financial years.

### LITERATURE REVIEW

Modeling volatility of Indian equity markets has been an area of active research. For instance, Rajan (2011) has used GARCH model to capture the irregular time varying movement in SENSEX, the leading Index in Bombay stock exchange in India, during 1st July 1996 to 3<sup>rd</sup> July 2009.

Dutta (2011) have estimated the volatility of S&P CNX NIFTY index for the last ten financial years by measuring the variance of the daily index returns within each financial years. The author observed that the volatility varied from one financial year to another. This observation in fact justifies the use of heteroscedastic models such as ARCH or GARCH to capture the time varying volatility in Indian share market.

Kaur (2004) studied the extent and pattern of stock return volatility in Indian equity market during 1999 to 2000. The author observed that April was the most volatile month followed by March and February.

Rao (1997) has observed that budget increased the volatility of stock prices.

S&P CNX NIFTY in one of the leading stock market indices in India. It represents 22 sectors in Indian economy. We have not come across any recent study on estimating volatility of S&P CNX NIFTY covering the last ten financial years, from 1st April 2001 to 31st March 2011. This paper is attempt in this direction.

**DATA**

Daily return of S&P CNX NIFTY index is defined as  $R_t = \text{Log}(P_t/P_{t-1})$ , where  $P_{t-1}, P_t$  denote the closing price of S&P CNX NIFTY index in two consecutive trading days. We have collected data on closing values of S&P CNX NIFTY Index from NSE website, viz. www.nseindia.com, and computed the values of daily NIFTY returns for the period 1st April 2001 to 31st March 2011.

**METHODOLOGY**

The data analysis is performed in three stages which are described below.

i. 1<sup>st</sup> Step. Model Detection: GARCH models assume that the present variance  $\sigma_t^2$  be a linear combination of the squares of the previous innovations. For instance,  $\sigma_t^2 = \alpha_0 + \sum_{i=1}^p \alpha_i y_{t-i}^2 + \sum_{i=1}^q b_i \sigma_{t-i}^2$ . So our first step is to check whether this assumption is acceptable for the data under study.

The square of the daily NIFTY returns represent the variance of the daily returns (see Ranjan (2011)). Existence of autocorrelation among the squared returns provide evidence in favor of the hypothesis that the present volatility can be estimated in terms of the past volatility. Therefore, existence of autocorrelation in squared returns will justify the GARCH modeling of the NIFTY volatility.

An autocorrelation coefficient of lag k, measures the extent of correlation among the observations separated by time lag k in a time series. Given a time series  $\{X_t\}_{t=1,2,\dots,n}$  the autocorrelation coefficient of lag k, denoted by  $\rho_k$ , is defined as

$$\rho_k = \frac{\sum_{t=1}^{n-k} (X_t - \bar{X})(X_{t+k} - \bar{X})}{\sum_{t=1}^n (X_t - \bar{X})^2}, \text{ where } \bar{X} = \frac{X_1 + \dots + X_n}{n} \text{ is the mean of the n observations. In this paper } X_t = R_t^2, \text{ where } R_t \text{ is the NIFTY return for the } t\text{-th day, and n is the number of trading days in the period under study.}$$

The plot of  $\rho_k$  against k is called the autocorrelation (acf) function plot. We use "acf" command in R software to produce the acf function plot (see www.r-project.org). If the calculated value of  $\rho_k, k = 0,1,2,\dots$  lie outside the confidence limits (the blue lines in Figure 1), then we reject the hypothesis of no autocorrelation in daily squared returns. In that case we can estimate the volatility by fitting GARCH model.

ii. 2<sup>nd</sup> Step. Fitting GARCH model. If the lower order autocorrelations are significant and the autocorrelations decrease rapidly as lag is increased (see Figure 1), then the squared returns seem to follow a 1<sup>st</sup> order auto-regression process. In that case, we fit a simple GARCH (1,1) model which is defined below.

$$R_t = \mu + y_t, \text{ where } y_t = \sigma_t z_t \text{ and } \sigma_t^2 = \alpha_0 + \alpha_1 y_{t-1}^2 + b_1 \sigma_{t-1}^2 \quad (1)$$

The parameters  $\mu, \alpha_0, \alpha_1$  and  $b_1$  are estimated by maximum likelihood method using the package fGarch in free software R for statistical computing (see www.r-project.org). The parameter estimates are tabulated in Table 1.

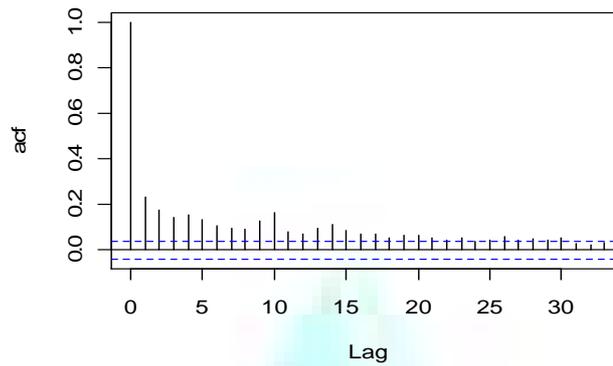
iii. 3<sup>rd</sup> Step. Verifying the adequacy of the fitted model. Let  $\hat{\mu}, \hat{\alpha}_0, \hat{\alpha}_1$  and  $\hat{b}_1$  be the maximum likelihood estimates of the model parameters. The standardized residual, at time t, is defined as  $\hat{z}_t = (R_t - \hat{\mu}) / \hat{\sigma}_t$  where  $\hat{\sigma}_t^2 = \hat{\alpha}_0 + \hat{\alpha}_1 y_{t-1}^2 + \hat{b}_1 \sigma_{t-1}^2$ . Note that  $\hat{z}_t$  is an approximation of the residual  $z_t$ .

The GARCH model assumes that the residual  $\{z_t\}$  are white noise. Therefore if our fitted model is appropriate, then there should be no autocorrelation left in the squared standardized residuals  $\{z_t^2\}$ . The final step is to verify whether there exists any autocorrelation among the squared standardized residuals  $\{z_t^2\}$ . In Figure 2 we plot the acf function for the  $\{z_t^2\}$  values.

If there is no significant autocorrelation in  $\{z_t^2\}$  terms (i.e. autocorrelation coefficients lie within confidence limits), we conclude that the fitted GARCH (1,1) model is appropriate. In that case  $\hat{\sigma}_t^2 = \hat{\alpha}_0 + \hat{\alpha}_1 y_{t-1}^2 + \hat{b}_1 \sigma_{t-1}^2$  provide reliable estimate of the daily NIFTY volatility. In Figure 3, we visualize the NIFTY volatility by plotting  $\hat{\sigma}_t^2$  against t.

Data Analysis and Findings: In Figure 1 we plot the autocorrelation function of the daily NIFTY returns from 1st April 2001 to 31st March 2011.

**Fig1: acf of squared NIFTY returns 2001-2011**



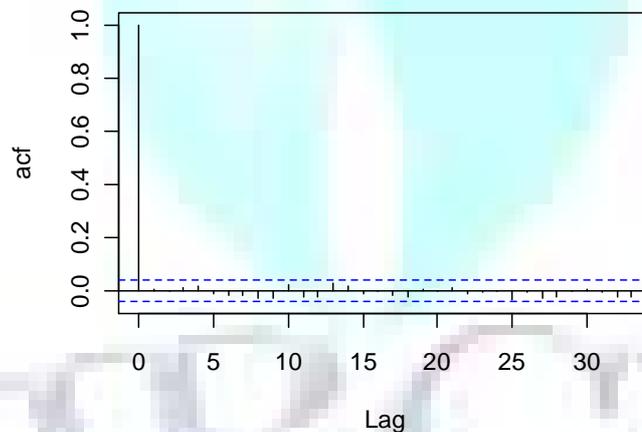
From Figure 1 we see that there exists strong autocorrelation between the squared daily returns of the NIFTY index for the period under study. This motivates the GARCH model. We fit a simple GARCH (1,1) model, see equation (1), to the NIFTY daily return data. The four parameters are estimated by maximum likelihood method using fGarch package in R. The values of the maximum likelihood estimates  $\hat{\mu}$ ,  $\hat{\alpha}_0$ ,  $\hat{\alpha}_1$  and  $\hat{b}_1$  are given in Table 1.

**TABLE 1: MAXIMUM LIKELIHOOD ESTIMATES AND P-VALUE OF THE TEST OF SIGNIFICANCE FOR THE PARAMETERS**

Parameters	Estimates	p-value
$\mu$	0.056	0
$\alpha_0$	0.014	0
$\alpha_1$	0.150	0
$b_1$	0.827	0

The p-values, in the third column of Table 1, are p-values of the tests of hypotheses that the model parameters are zero. The zero p-values indicate that effect of all the parameters is important, and none of them can be assumed to be zero.

**Fig 2: acf plot of squared residuals in GARCH**



Substituting the values of the parameter estimates  $\hat{\mu}$ ,  $\hat{\alpha}_0$ ,  $\hat{\alpha}_1$  and  $\hat{b}_1$  in equation (1) we get the fitted GARCH (1, 1) model. In this model the estimated volatility at time t is given by

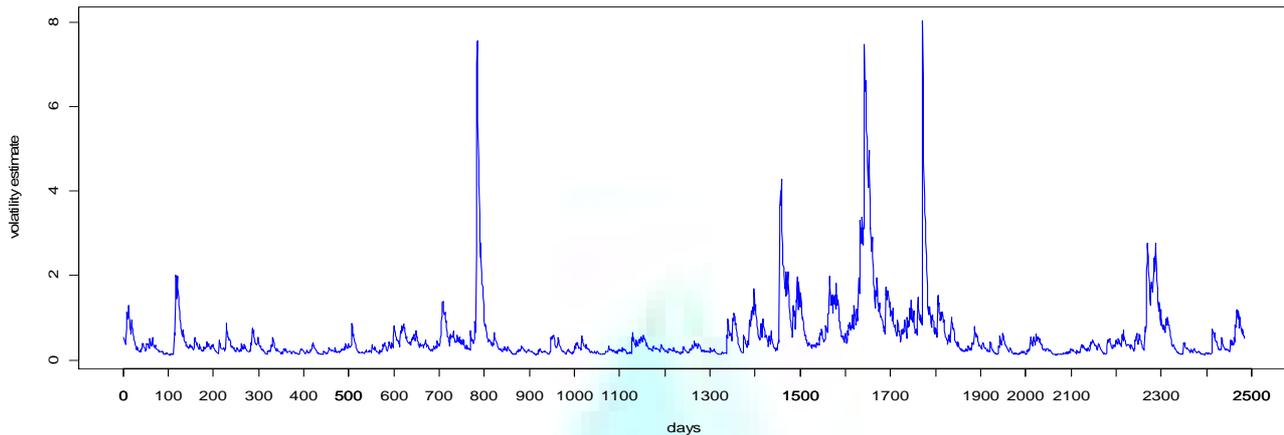
$$\hat{\sigma}_t^2 = \hat{\alpha}_0 + \hat{\alpha}_1 y_{t-1}^2 + \hat{b}_1 \hat{\sigma}_{t-1}^2 = 0.014 + 0.150y_{t-1}^2 + 0.827\hat{\sigma}_{t-1}^2 \quad (2)$$

The standardized residual at time t equals,  $\hat{z}_t = (R_t - \hat{\mu}) / \hat{\sigma}_t$ . If the estimated volatility  $\hat{\sigma}_t^2$  in equation (2), is successful in capturing the true volatility present in the data then there should be no autocorrelation left in the squared standardized residuals.

In Figure 2 we plot the autocorrelation function of the squared standardized residuals  $\{\hat{z}_t^2\}$  in the fitted GARCH (1,1) model. From Figure 2, we see that there is no significant autocorrelation in the squared standardized residuals. This indicates that  $\hat{\sigma}_t^2$ , in equation (2), is successful in capturing the volatility present in the data.

Finally in Figure 3 we plot the volatility estimate  $\hat{\sigma}_t^2$  values to visualize how volatility has changed during period under study.

Fig 3: Estimated daily NIFTY volatility during 2001-2011



There are 2487 trading days during the period from 1st April 2001 to 31st March 2011. These days are numbered 1 to 2487 and are plotted along the x-axis in Figure 3. The corresponding volatility estimates are plotted along the y-axis in Figure 3.

## FINDINGS

The main observations are as follows.

1. From Figure 3 we can see that there are six prominent peaks, which indicate that there were sharp increases in NIFTY volatility on six occasions during the last ten financial years.
2. The first prominent peak occurred between 100 to 150 days, i.e. during last week of August 2001 to 2<sup>nd</sup> week of October 2001. Another sharp increase in volatility is observed near 800 days, that is in June 2004.
3. During the last ten financial years the most volatile period seems to be from 1300 to 1900 days, i.e. from 1<sup>st</sup> week of June 2006 to 1st week of November 2008. Within this period there are three high peaks, indicating rapid increase in volatility. One peak occurred during 1450 to 1500 days, i.e. during January to March 2007. The next two peaks occurred during 1600 to 1800 days i.e. from 2<sup>nd</sup> week of August 2007 to 2<sup>nd</sup> week of June 2008. During this period the NIFTY moved from 4400 to above 6200 in 1<sup>st</sup> week of January 2008, and then again back to 4040 during June 2008.
4. A sharp increase in volatility is again observed during 2300 days i.e. July 2010.
5. The volatility in NIFTY daily returns seems to have increased quite drastically since June 2006. For instance, before June 2006 there were only two occasions when volatility increased sharply. In contrast the volatility has increased sharply four times after June 2006.

Moreover for a substantial period viz. 850 to 1300 days i.e. August 2004 to June 2006, the NIFTY daily returns were less volatile. However after June 2006, NIFTY daily returns have been highly volatile for almost two years till January 2008.

## CONCLUSION

We see that the plot of the volatility estimates using GARCH (1,1) model is a powerful tool to visualize the changes in volatility in NSE over the last ten financial years. The volatility in Indian equity market, especially in NSE, seems to have increased quite drastically during the last four financial years. The reason for this increase in volatility seems to be the in and out flow of large institutional investments in Indian equity markets, depending global economic scenario and some domestic factors such as GDP growth, RBI interest rate policies, inflation rate etc. Considering the present economic uncertainty in Europe and high inflation rate in India, the Indian equity market may witness more volatile days ahead.

## ACKNOWLEDGEMENT

The author is thankful to Pinky Dutta, research scholar in Business Administration, Tezpur University, for her help in data collection and her comments on the paper.

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**BANKING IN JAMMU AND KASHMIR: AN OVERVIEW**

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**ABSTRACT**

*Banks continue to play an important role in the economic environment. Historically, banks have played the role of intermediation between the savers and the investors. Besides transforming resources from savers to investors, these instruments enable allocation of risks and reallocation of capital to more efficient use. Bank credit to productive sectors of the economy has a critical role in sustaining the growth process. This research paper provides a complete look about agency-wise number of banks branches in Jammu and Kashmir, banking development over the years in J & K, agency-wise business performance of all scheduled commercial banks in comparison with all India level, banking profile with their business position in districts, business performance of central cooperative banks. And suggest suitable measures to overcome the problems. Significant part of the study depends on secondary sources. But information has also been obtained from primary sources which include interviews, comments, observations, opinion, notes, etc. of the persons concerned with the banking in Jammu and Kashmir. Banking is an instrument of economic growth in the state of Jammu and Kashmir and has contributed a lot in developing the economy. The role of banking services is overwhelmingly recognized in the equitable growth process. The banks have a direct bearing on poverty alleviation and unemployment reduction. Thus banking is the best way to fight the evil of unemployment.*

**KEYWORDS**

Agency-wise, Co-operative, Commercial, Development, Jammu and Kashmir, Schedule.

**INTRODUCTION**

India has a strong and vibrant banking sector comprising state-owned banks, private sector banks, foreign banks, financial institutions and regional banks including co-operative banks, rural banks etc. The banking system in India is entirely controlled regulated and directed by Reserve Bank of India (RBI) which acts as monetary authority of the country. RBI lays down guidelines for day-to-day functioning of banks within the overall frame work of the Banking Regulation Act, 1949. The India banking sector is dominated by 28 state-owned banks which operate through a network of about 50,000 branches. Banking structure in Jammu and Kashmir consists of commercial banks, regional rural banks and cooperative banks. The growth of commercial banks and co-operative credit societies has been really spectacular.

**OBJECTIVES OF THE STUDY**

The focus of the study is on the following objectives:

1. To review the agency-wise number of bank branches by area in J& K.
2. To review the banking development over the years in J&K.
3. To study agency-wise business performance of all scheduled commercial banks v/s all India.
4. To study the business performance of central cooperative banks in J&K.
5. To identify the problems and suggest suitable measures to overcome the problems.

**METHODOLOGY ADOPTED**

Significant part of the study depends on secondary sources. But information has also been obtained from primary sources which include interviews, comments, observations, opinion, notes, etc. of the persons concerned with banking in the Jammu and Kashmir. The primary information was also gathered through discussion with persons in State Bank of India, Regional Rural Banks, Scheduled Commercial Banks etc. Materials for the present study were collected from the published records available in the library of Baba Ghulam Shah Badshah University, Rajouri, Jammu and Kashmir, DSEO, various Economic survey, Reserve Bank of India's report magazines, journals, annual reports and periodicals, have also been gone through to derive information pertaining to the present study.

**LIMITATIONS OF THE STUDY**

Nothing is perfect so is this study. The present study suffers from certain limitations. The study is based on the information from secondary source which reduce the degree of reliability. However, attempt has been made to collect maximum information from the official record of banks in general and J&K in particular on the various aspects of the study. Most of the departments neither publish the information nor do they allow the outsiders an access to their records, internal workings etc. on the pretext of maintaining secrecy. This restricts the data availability. It was difficult to collect all the necessary data from grass-root level.

**PROFILE OF BANKING STRUCTURE IN THE STATE OF JAMMU AND KASHMIR**

The spread of banking network is a continuous process. An addition of 12 bank branches has been made in the banking network during the period of six months only between March, 2009 and September, 2009 in J&K. Profile of banking structure by area and by bank group as on September, 2009 is as follows:

**TABLE NO. 1: AGENCY-WISE NUMBER OF BANK BRANCHES BY AREA IN J&K**

Bank Group	Rural	Semi Urban	Urban/Metropolitan	Total	Percentage share
State Bank of India and its Associates	66	37	41	144	14.88
Regional Rural Banks	212	23	14	249	25.72
Nationalized Banks	35	34	97	166	17.15
Other Scheduled Commercial Banks	219	84	106	409	42.25
All Scheduled Commercial Banks	532	178	258	968	100
Percentage Share	54.96	18.36	26.65	100	

Source: Govt. of J&K, Economic survey 2009-10, Directorate of Economic & Statistics, J&K, p 119.

At the end of September, 2009, there were 968 bank branches of All Scheduled Commercial Banks in the state; the corresponding number of banks for India was 81090. Major chunk of 409 bank branches is under the ownership of bank group categorized as "Other Scheduled Commercial Banks" accounting for 42.25%, the agency known by "Regional Rural Banks" claims another 25.72% of banking structure with 249 branches, "Nationalized Banks" have a network of 166 branches sharing 17.15% and only 14.88% share of All Scheduled Commercial Banks goes to "State Bank of India and its Associates" with a lowest number of 144

branches. There is no foreign bank in the State. To be more specific, out of twelve additional bank branches, SBI and its associate banks have added 10 branches and Other Scheduled Commercial Banks have added two more branches in their networking.

The profile of All Scheduled Commercial Banks further indicates that bank branches located in rural areas account for major share (54.96%) with a count of 532 branches, followed by 258 and 178 branches located in Urban/Metropolitan and Semi Urban areas sharing 26.65% and 18.39% respectively. During the period March to September 2009 All Scheduled Commercial Banks have made addition of 5, 1 and 6 branches in their network in rural, semi urban and urban/metropolitan areas respectively.

With the increase in the bank networking the dependence per bank branch has considerably decreased over the years. The banking development over the years in J&K is as follows:

**TABLE NO. 2: BANKING DEVELOPMENT IN JAMMU AND KASHMIR**

Year	Bank Branches (No)	Area Covered (sq.kms)	Population Covered (No)	Deposits (Rs. in Cr.)	Credits (Rs. in Cr.)	Credit Deposit Ratio
2000-2001	816	124.25	12198	10105	3874	38.34
2001-2002	824	123.04	12637	11808	4244	35.94
2002-2003	829	122.30	12895	13243	5028	37.97
2003-2004	841	120.56	13049	14879	5831	39.19
2004- 2005	858	118.17	13130	17273	6673	38.63
2005-2006	856	118.44	13510	19281	8658	44.90
2006-2007	867	116.94	13693	21956	10377	47.26
2007-2008	914	110.93	13334	25148	12090	48.08
2008- 2009	956	106.05	13087	29355	13587	46.29
Sep, 2009	968	104.74	13268	29853	14686	49.19

Source: Government of India, Reserve Bank of India, Mumbai.

When the availability of bank branches is linked with area coverage, the dependence per bank branch has gone down from 124.25 Sq. kms ending September, 2009 as against 39.05 Sq. kms for the country. However, average population per bank branch is in the neighbourhood of thirteen thousand during the period 2001-02 to 2009-10 (as on September, 2009) as against around fourteen thousand at all India level at the end of September 2009.

## BUSINESS PERFORMANCE OF SCHEDULED COMMERCIAL BANKS

The banks have maintained growth momentum in all the important areas of business operations.

### AGGREGATE DEPOSITS

Aggregate deposits of All Scheduled Commercial Banks in the State rose by 16.73% to Rs. 29355 crore as on 31-03-2009, compared with an year ago period, as against 21.94% growth at national level during the same period. As on September 2009, the aggregate deposit of All Scheduled Commercial Banks stood at Rs. 29853 crore an increase of 1.7% over the deposits, ending March, 2009. This increase for the country was 4.17%. Average deposits per bank branch works out to be Rs. 30.84 crore a compared to Rs. 50.58 crore for the country at the end of September, 2009. Other Scheduled Commercial Banks as a group accounted for 61.50% of the aggregate deposits, while State Bank of India and its Associated accounted for 18.44%. The share of Nationalised Banks and Regional Rural Banks in aggregate deposits was 15.08% and 4.98% respectively.

### GROSS BANK CREDIT

The focus on credit growth helped the banks to record an impressive growth of 12.38% during the year 2008-09 over 2007-08 as against much impressive growth of 19.33% for the country during the same period. The total bank credit increased from Rs. 12090 crore in 2007-08 to Rs. 13587 crore in March 2009 and Rs. 14686 crore as on September 2009, measuring 8.09% rate of growth as on September, 2009 over March, 2009 as compared to only 0.85% growth rate for India during the same period. Average credits per bank works out to be Rs. 15.17 crore, the figure for the country as on September, 2009, works out to Rs. 35.54 crore.

As regard gross bank credit, Other Scheduled Banks held the highest share of 74.88% in the total bank credit, followed by Nationalized Banks with 12.37%. State Bank of India and its Associated and Regional Rural Banks had relatively lower share in the total bank credit at 9.36% and 3.39% respectively. At the all India level, one half (1/2) bank deposits and gross bank credit is held by Nationalized banks and the next one half bank credit is owned by the other four bank groups.

### CREDIT DEPOSIT RATIO

The business performance of the banks is generally measured in terms of Credit Deposit Ratio (CDR). Agency-wise business performance of All Scheduled Commercial Banks as on September, 2009 in comparison with all India level figures is as follows:

**TABLE NO.3: BUSINESS PERFORMANCE OF ALL SCHEDULED COMMERCIAL BANKS V/S ALL INDIA LEVEL (Rs. in Crore)**

Agency	Jammu and Kashmir			All India		
	Deposits	Credits	CDR	Deposits	Credits	CDR
State Bank of India and its Associates	5504 (18.44)	1375 (9.36)	24.98	975090 (23.77)	682420 (23.68)	69.99
Nationalized Banks	4503 (15.08)	1816 (12.37)	44.33	2071630 (50.51)	1456097 (50.53)	70.29
Regional Rural Banks	1485 (4.98)	498 (3.39)	33.54	122410 (2.99)	72136 (2.50)	58.93
Foreign Banks	-	-	-	229242 (5.59)	157652 (5.47)	68.77
Other Scheduled Commercial Banks	18361 (61.50)	10997 (74.88)	59.89	703146 (17.14)	513593 (17.82)	73.04
All Scheduled Commercial Banks	29853 (100.00)	14686 (100.00)	49.19	4101518 (100.00)	2881898 (100.00)	70.26

Source: Government of India, Reserve Bank of India, Mumbai.

With credits growing by 12.38% in 2008-09, credit deposit ratio of All Scheduled Commercial Banks was 46.19% as on March 2009, less by 1.89% than a year ago period in Jammu and Kashmir State. The CDR for the country came down from 74.16% to 72.58% during the same period. As on September, 2009, the CDR was recorded at 49.19% for the state as against 70.26% for the country. Highest CDR of 59.89% as on September 2009 has been observed in Other Scheduled Commercial Banks and lowest i.e. 24.98% in respect of State Bank of India and its Associates. In J&K all the bank groups have recorded CDR lower than RBI norms of 60%.

At all India level as on September, 2009s highest CDR of 73.04% has been observed in Other Scheduled Commercial Banks, followed by 70.29% in respect of Nationalized Banks. The CDR below national average of 70.26% has been recorded in bank branches of SBI and its Associates (69.99%), Foreign Banks (68.77%) and much lower i.e. 58.93% in case of RRBs. At all India level, the CDR of RRBs only is lower than the RBI norm.

The growth of deposits with the banking system in 2008-09 was higher than the growth of credits both at state and all India level. In J&K during 2008-09 deposits have risen by 16.72% against 12.38% growth in credits, these growth rate figures for the country were 21.94% (deposits) and 19.33% (credits). This mis-match in

growth figures reflected in decline in the incremental credit-deposit ratio from 48.08% as on March 2008 to a level of 46.29% as on March 2009, for J&K and from 74.16% (ending March 2009) at all India level. During the year 2009-10(ending September 2009) deposits have grown at a rate of 1.70% and credits by 8.09% at state level resulting in increase in the CDR from 46.29% (2008-09) to 49.19% (ending September 2009). At all India level again the deposits have grown at a rate of 4.17% compared to only 0.85% in credits, thus lowering the CDR from 72.58% in 2008-09 to 70.26% (as on September 2009).

### CENTRAL CO-OPERATIVE BANKS

Under short term credit structure Jammu and Kashmir Central Co-operative Bank is the apex bank. There are three District Central Co-operative Banks, two in Kashmir region and one in Jammu region. These Cooperative banks have network of 204 branches. Table No. 4 reveals the information in figures regarding business performance of Central Co-operative Banks are as follows :

TABLE NO. 4: BUSINESS PERFORMANCE OF CENTRAL CO-OPERATIVE BANKS (Rs. in Crore)

Bank	Deposits			Credits			Credit Deposit Ratio		
	Ending March			Ending March			ending March		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
1) State Co operative Bank	301.14	299.94	348.34	70.94	74.91	83.90	23.56	24.97	24.09
2) Distt. Central Co-operative Banks	796.28	842.79	943.68	326.38	371.66	426.21	40.99	44.10	45.16
a) Anantnag	92.99	94.48	112.94	40.66	40.04	43.18	43.73	42.38	38.23
b) Baramulla	145.79	153.86	168.20	87.82	107.35	139.14	60.24	69.77	82.72
c) Jammu	557.50	594.45	662.54	197.90	224.27	243.89	35.50	37.73	36.81
Total (1+2)	1097.42	1142.73	1292.02	397.32	446.57	510.11	36.20	39.08	39.48

Source: Govt. of J & K, Economic Survey, Directorate of Economics & Statistics, J&K, p 124.

For the year 2007-08, deposits of the Central Co-operative Banks stood at Rs. 1292.02 crore as against Rs.1142.73 crore for the year ending March 2007, and Rs.1097.42 crore ending March 2006, registering an increase of 13.06% and 4.13% during 2007-08 and 2006-07 over respective previous years. However, increase in the advanced made by the Central Co-operative Banks was recorded to be 14.23% ending March 2008 over one year ago period. In the aggregate deposits, the maximum share of 73.04% went to District Central Co-operative Banks. In the entire advance of Rs.510.11 crore made by the Central Cooperative Banks as on 31-3-2008, the share of district Central Cooperative banks was 83.55% with an amount of Rs.426.21 crore and 16.45% advances (Rs.83.90crore) are held by State Cooperative Bank.

Credit Deposit Ratio of Central Co-operative banks marginally improved from 39.08% in March 2007 to 39.48% in March 2008. District Central Co-operative Bank, Baramulla has the highest CDR of 82.72% and lowest CDR of 24.09% was observed for State Co-operative Bank as on March 2008. District Central Cooperative Bank Baramulla only has the CDR above RBI norm of 60%. The CDR of State Cooperative Bank along with district Central Cooperative bank Anantnag and Jammu is far behind the RBI norm.

### TECHNOLOGICAL DEVELOPMENT IN BANKS

The banking sector in India is adapting itself to rapid innovations in technology particularly on the information based technology front to impart efficiency in providing wide range of products and services to the public at large. Computerization of banking operations in receiving high importance. Some banks have installed Automated Teller Machines (ATMs) at important places to facilitate customers. To strengthen their business performance Scheduled Commercial Banks have adopted many initiatives. A number of services are being provided such as "anywhere banking" "everywhere access" and quick transfer of funds in an efficient manner and at reasonable cost.

### SUGGESTION

We need a strong and innovative financial sector capable of responding to the growing needs of the new emerging entrepreneurs especially in small and medium enterprise sector. During the years, significant progressive changes have taken place in banking and financial structure of Jammu and Kashmir. Bank credit to productive sectors of the economy has a critical role in sustaining the growth process. I suggested some suitable measures to overcome the problems are as follows:

- Employee should be involved in decision-making process. It will lead to employee satisfaction, which results in customer satisfaction and this in turn, will lead to success of the banks as a whole.
- The services should be advertised more and more so as to increase awareness level of customers regarding new services. It would be better for bank to use local channels and language to reach and understand mass customers.
- There should be separate counters in the branches to handle customer grievances and complaints.
- The banks should also endeavor to provide better quality service to the customers with wider choice of products and services.
- The infrastructure of local branches needs to be developed.
- Feedback from customers as well as employees is given more importance.

### CONCLUSION

Banking is an instrument of economic growth in the state of Jammu and Kashmir and has contributed a lot in developing the economy. The role of banking services is overwhelmingly recognized in the equitable growth process. The banks have a direct bearing on poverty alleviation and unemployment reduction. Thus banking is the best way to fight the evil of unemployment.

### ABBREVIATIONS AND ACRONYMS

CDR	: Credit Deposit Ratio.
J&K	: Jammu and Kashmir.
RBI	: Reserve Bank of India.
RRBS	: Regional Rural Banks.

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**WEBSITES**

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**SELF HELP GROUPS: AN INTEGRATED APPROACH OF EMPOWERMENT FOR SHE ENTREPRENEURS**

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**ABSTRACT**

*Women's empowerment is a full participation on the basis of equality in all spheres of society, including participation in the decision making process and access to power; of course these are fundamentals for achievement of equality, development and peace of nation. In India Self Help Group plays vital role in empowering women. Indian women have adequate potential sparks which can be well fanned into flames with necessary guidance and training. Women can be brought to live in par with men in all spheres of human life in our society. Therefore as group oriented model, SHG's in India can be evolved as mechanism for women's development and collective empowerment through improvement in both 'condition' and 'position' in India. This has developed many women entrepreneurs in India. These She entrepreneurs are engaged in food production, jewelry making, embroidery work, tailoring firms, play schools, sanskar varg and even small day care centers. Many of she entrepreneurs are become joint entrepreneurs and run grocery shop, garment shops, hotels. This conceptual study was undertaken to observe the empowerment of women to be an entrepreneur as she has main problem of funds and moral support. Self Help Group is an integrated approach for the women and by the women. Self Help Groups are currently being promoted as key strategy for simultaneously addressing both poverty alleviation and women empowerment where financial service provision leads to setting up expansion of micro enterprises, there are a range of potential impacts. It is in this context that this paper makes an attempt to underscore some experiences of women entrepreneurs in a country like India and to put forth challenges that women face in wake of globalization and role played by SHG's.*

**KEYWORDS**

Women entrepreneurship, Self help grpups, empowerment, integrated, globalization.

**INTRODUCTION**

Entrepreneurship is the act of being an entrepreneur, which can be defined as "one who takes over the world, innovations and finance and business acumen in an effort to transform innovations into economic goods." This may result in new organizations or may be part of revitalizing mature organizations in response to a perceived opportunity.

An entrepreneur is a person who has possession of a new enterprise, venture or idea and is accountable for the inherent risks and the outcome. When women enter into a business venture, she becomes a women entrepreneur.

In the words of President Dr. A.P.J. Abdul Kalam, "Empowering women is a prerequisite for creating a good nation, when women are empowered; society with stability is assured. Empowerment of women is essential because their thoughts and value systems lead to the development of a good family, good society and ultimately a good nation."

Of course unless she is empowered, she will not be an entrepreneur rather a successful entrepreneur. A woman in business is a recent phenomenon in India. Women entrepreneurs are a group of women who initiate, organize and operate a business enterprise. Women entrepreneurs engaged in business due to push and pull factors, which encourage women to have an independent occupation and stand on their own legs. The literacy and educational status of women improved considerably during the past few decades, Higher educational and research institutions are imparting knowledge and specialization in this respect. At this juncture effective steps are needed to provide entrepreneurial awareness, orientation and skill development programs to women. But here is the question mark to think, how? The answer for this question lies in the concept of SELF Help Groups for women. Any strategy aimed at Economic development will be imbalanced without involving women who constitute half of the world population. As a

Result of it, women entrepreneurship has gained momentum in the last three decades where women enterprises and their growth are increased.

**STATUS OF WOMEN IN INDIA**

The progress of a country involves not merely economic but social and institutional changes also. In India about 50% of total population constitutes women but women workers constitute only 16% of total population. Out of this 16%-18% remains employed in unorganized sectors. Unless women contribute economically, the country cannot progress. Development of any nation to a great extent depends on the successful organization of productive economic activities, a prerequisite for which is the presence of good quality entrepreneur's. In other words, in any nation the responsibility of pulling the tempo of economic development ahead falls ultimately on entrepreneurs. Many countries lag behind in the development race because of the absence of good quality entrepreneurs. In such countries, which lack sufficient number of entrepreneurs, women entrepreneurs, who due to some social reasons are not allowed to walk out and show their entrepreneurial and organizational qualities, represents an important untapped source of economic growth. No wonder, Self Help Groups have showed the way to walk out.

Given the importance to entrepreneurship in the process of economic development, women entrepreneurs can play an important role if they are providing with conducive environment to work within. Women, who are often called as a good household managers are believed to be well equipped for running any business. But now the trend is changed.

Though India houses eminent women entrepreneurs like Indra Nooyi, Anu Agra, Ekta Kapoor, Vidya Chabriya, Kiran Mujumdar, Chandda Kochhar their number is found to be relatively low. The above examples of women entrepreneurs from India make it crystal clear that Indian women are second to none when it comes to demonstrating entrepreneurial skills. However what is essential is supporting their initiatives through proper efforts/policies so as to realize the women empowerment in true sense. The liberal meaning of term empowerment is becoming powerful. The word empowerment is being used today in all spheres of life as a process to strengthen the elements of society.

**NEED OF WOMEN EMPOWERMENT: SPACE FOR DEVELOPMENT AND GOVERNMENT'S ROLE**

The potential contribution of micro finance programmes to women entrepreneurship and empowerment, realizing this contribution is depending on, rather than a substitute for, adequate welfare provision and feminist mobilization. What is particularly worrying about the current situation in India is financially sustainable minimalist microfinance is being promoted as the key strategy for poverty alleviation, empowerment and entrepreneurship in response to ever decreasing official development assistance budgets. Unless micro finance is conceived as part of broader strategy for transformation of gender inequality, it risks becoming one more means of shifting the costs and responsibilities for development of very poor women. Women and laws guaranteeing for their equal rights of participation in political process and equal opportunities and rights in education and employment were enacted. But unfortunately, the government sponsored development activities have benefited only a small section of women. The large majority of them are still unaffected by change and development activities have benefited only a small section of women i.e. the urban middle class women. The large majority of them are still unaffected by change and development.

The Self Help Groups have paved the way for economic independence of women. The members of SHG's are involved in Micro-Entrepreneurships. Through that they are becoming economically independent and providing employment opportunities to others. Women comprise half of human resources. They have been identified as key agents of sustainable development and women equality is as central to a more holistic approach towards stabilizing new patterns and process of development that is sustainable.

According to human development reports of International Labor Organization and United Nations Organisation, the problems of unemployment, poverty, inequality, terrorism, criminality, corruption and exploitation are spreading everywhere. Women are suffering from its direct and indirect effects Sexual harassment and violence are daily matters. Government of India has liberalized labor laws under free economic policy. It also affects on employment of a women. Education, health and public welfare are important means of human development, but till now majority of rural women is deprived from these basic amenities. In India, the proportion of girls is 927 per thousands, while in Maharashtra it is 917. So it is become essential to empower women. Involvement of women in self help group movement is one of the best measures of women empowerment.

The empowerment approach was first clearly articulated in 1985 by Development Alternatives for Women with a New era.(DAWN). This term received prominence in early nineties in western countries. In India the central government in its welfare programmes shifted the concept of development to empowerment only in Ninth plan and observed the year as "Women Empowerment Year". Empowerment in its simplest form means the manifestation of redistribution of power that challenges patriarchal ideology and the male dominance. Micro finance through SHG's has reached the unreached the poor rural women. There is need to evolve an informal micro financing through formal financial institutions. The massive growth of micro finance has proved the way for immediate financial accessibility for the poor who are far away from this accessibility and micro finance. Micro Finance through SHG's is an alternative system of credit delivery for the poorest of the poor groups. It would help in improving the quality of life of women in India. The state level organization and NGO should come forward and extend facilities especially in empowering rural women by providing education, motivation, training, financial help and so on. SHG's bring utility and integrity among the members. It improves general welfare of family and community. SHG assists the women to perform traditional roles better and to take up micro entrepreneurship.

### SELF HELP GROUP: AN INTEGRATED APPROACH BY THE WOMEN AND FOR THE WOMEN

"Self Help group is a trust, Belief, and Conviction that the Community, no matter how backward, has resources that can be mobilized for meeting individual's local needs and that of the community for making local improvements and bringing about social change." Self Help Group movement is affecting the social dynamics of village life and urban life as seen never before. It is observed that that after women's participation in SHG's they are more respected in their own families and society in general. Their contribution to the family is valued and the family in turn supports them to undertake activities like these. These women also now voice their opinions in family decisions and get heard. Men are now encouraging the women to step out of the household to earn income and women are being given increasing say in the way in which the household income is spent. Women themselves are more empowered by the SHG movement.

SHG is a group of rural poor who have volunteered to organize themselves into a group for eradication of poverty of their members. They agree to save regularly and convert their savings into a Common Fund known as Group Corpus. The members of the group agree to use this common fund and such other funds that they may receive as a

Group through a common management. The group formation takes place keeping following broad guidelines:

Generally a Self Help Group may consist of 10-20 persons. However in difficult areas like deserts, hills and areas with scattered and sparse population and in case of minor irrigation and disabled persons, this number may be from 5-20. The difficult areas have to be identified by the State Level SGSY committee and the above relaxation in membership will be permitted only in such areas. All members of the group should belong to families below the poverty line. However, if necessary, a maximum of 20% and in exceptional cases, where essentially required, upto a maximum of 30% of the members in a group maybe taken from families marginally above the poverty line living contiguously with BPL (Below Poverty Line) families and if they are acceptable to BPL members of the group. This will help the families of occupational groups like agricultural labours, marginal farmers, and artisans marginally above the poverty line, or who may have been excluded from the BPL list to become members of Self Help Group. However the APL (Above Poverty Line) members will not be eligible for the subsidy under the scheme. The group shall not consist of more than one member from the same family. A person should not be a member of more than one group. The families must actively participate in the management and decision making, which should not ordinarily be entirely in the hands of APL families. Further, APL members of the Self Help Group, shall not become office bearers (Group leader, Assistant group leader, Treasurer) of the group.

The group should devise a code of conduct (Group Management Norms) to bind itself. This should be in the form of regular meetings (Weekly or fortnightly), functioning in a democratic manner, allowing free exchange of views, participation by the members in the decision making process. The group should be able to draw agenda for each meeting and take up discussions as per the agenda.

### YAMUNA SELF HELP GROUP, UTTARANCHAL - HOW MEETINGS ARE CONDUCTED



### HOW THE FUNDS ARE MADE AVAILABLE?



The primary focus of self help group is to provide emotional and practical support and an exchange of information. Such groups use participatory processes to provide opportunities for people to share knowledge, common experiences and problems. Through their participation, members help themselves and others by

gaining knowledge and information by obtaining and providing emotional and practical support. These groups are useful in helping the people with chronic health conditions and physical and mental disabilities. Self help group is a non-professional organization formed by people with a common problem or situation, for the purpose of pooling resources, gathering information and offering mutual support, services or care.

### SHG AND EMPOWERMENT OF WOMEN

Empowerment refers to increasing spiritual, political, social or economic strength of individuals and communities. It often involves the empowered to develop their confidence in own capacities (Wikipedia). It is the process of enhancing competence of individuals or groups to make choices and to transform those choices into preferred actions and outcomes. Vital to this practice are actions, which both build collective and individual assets, and improve the competence and fairness of the organizational and socio institutional context which govern the use of these assets.

Empowerment that is enhancing an individual's or group's capacity to make choices and transform those choices into desired actions and outcomes, is an increasingly familiar term within the World Bank and many other development agencies. Targeting practitioners engaged in the analysis of projects and policies that have empowerment components, to provide guidance on how to unpack the concept in order to measure empowerment (World Bank).

The term Empowerment has various aspects which are as follows:

- Social Empowerment

Sociological empowerment often addresses members of groups that social discrimination processes have excluded from decision making processes through for example, discrimination based on race, ethnicity, religion, and gender.

- Managerial empowerment

In the sphere of management and organizational theory "Empowerment" often refers loosely to processes for giving subordinates (or workers generally) greater discretion and resources: distributing control in order to better to serve both customers and the interest of employing organizations. It is any process that provides greater autonomy to employees through the sharing of relevant information and the provision of control over factors affecting job performance.

- Economic empowerment

In economic development, the empowerment approach focuses on mobilizing the self help efforts of the poor, rather than providing them with social welfare.

These are all the various aspects of women empowerment which is become possible because of Self Help Groups.

### WOMEN ENTREPRENEURSHIP THROUGH SELF HELP GROUPS: SOME CASES AND EXPERIENCES

Entrepreneurship Development is a very crucial factor for the acceleration of economic growth of any country and women entrepreneurship development is an essential part of human resource development. Women entrepreneurs have started show in more interest because it provides them an opportunity to be one's own boss, the challenges they want to face and the chances of making more money, which outweigh their family duties. Moreover, technological development empowers women to acquire more relevant qualifications and values to meet the demands of entrepreneurship. To fill the gap in the implementation of this erstwhile self-employment must be designed to development of entrepreneurship among the women, through which possible to develop the women empowerment.

India has made tremendous progress in various spheres of life during the last five and half decades. Its economy has expanded and diversified, society has become cohesive and polity democratized. It has also been facing many problems, some of which have successfully been solved, but many others still remain unsolved. Poverty is one such challenge India has been facing today. To fill these gaps the Government of India announced a holistic programme called Swarna Jayanti, Gram Swarozgar Yojana, which is based on group approach to rural poor were organized into Self-Help Groups (SHGs) provided micro-credit and look up viable economic activities on their own.

### ACTIVITIES PERFORMED UNDER SEWA-SELF EMPLOYED WOMEN'S ASSOCIATION



### EMPLOYMENT GENERATION THROUGH SELF HELP GROUPS



Let us look at some of the examples as case studies and experiences from India, specifically from Maharashtra..

**The Bhimthadi Jatra'**, a platform for women self-help groups (SHGs) to market their produce, has entered the fifth year with several success stories to its credit. Over 162 selected SHGs from all over the country participated in this year's Jatra, held at the SSPMS ground near the RTO office, pune, from October 21 to

24. Women's groups from Mizoram, West Bengal, Karnataka, Himachal Pradesh, Orissa, Andhra Pradesh and Maharashtra have taken part in displaying a range of handicrafts and handlooms, besides a plethora of food items.

**Vidya Mhatre**, a part of the city-based Shri Swami Samarth Mahila Bachat Gat, has created a reputation for serving the best Alibaug Special Fish', besides other exotic seafood items. She said that she had taken a risk of offering not so famous dish at Jatra and her earnings actually took off well. It had helped her to start her own catering business and she will be opening Sea-Food Eatery in Baner-Pune.

**The Bahinabai-Purnache Mande self-help group** is known for its mouth-watering Khandeshi recipes, especially the mande' (or large puran-poli'). Today, the SHG supplies its specialities to outlets in Pune, Satara and Kolhapur.

**The Ambika Mahila Bachat Gat** from Khutgaon in Daund has written one of the biggest success stories of the event so far. Known for formulating and manufacturing over 30 varieties of household masalas', the group of over 100 women worked as farm labourers over five years ago. Ambika, today, has clients as far as in Germany and Australia. Ambika Bachat Gat headed by Kamalata Pardeshi have been granted Rs.7 Crore from State Government, the money is used for pouch-packing, building facility in Khutgaon on a piece of land approved to them and on other marketing initiatives,"

Special laddoos' made from groundnut and sabudana' by members of the **Gayatri Mahila Bachat Gat from Baramati**, are a hit at the Bhimthadi. They are selling their products to all sweet marts and major malls in and around Baramati. Over the years, these SHGs have significantly improved packaging of products. Sunanda Pawar, a trustee of the Agriculture Development Trust opined that the women now have year-long orders and have become financially self-sufficient.

## CONCLUSION

The enhancement of entrepreneurship qualities among the members of self help groups is an important step in the social and economic empowerment of women. The SHGs have improved the quality of status of women as participants, decision makers and beneficiaries in the democratic, economic and socio-cultural life. The important suggestions for improvement are the development of skill oriented training programmes, encouragement of good leadership in the group and constant guidance and support through the government and non-government organizations.

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**MULTILEVEL DETERMINANTS OF DROP OUT AT ELEMENTARY LEVEL IN INDIA**

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**ABSTRACT**

*Education has been used as a powerful means to exclude certain group of population from participating in the mainstream trajectory development. Thus Inequality in access to education emerges as one of well-known dimensions of social exclusion in India. In spite of strong government commitment incidence of drop out is the major deterrent in Universal retention and thus makes the goal of universal elementary education an elusive one. The present study attempts to explore the patterns and determinants of drop out at Elementary Level in India. This paper tries to address some specific questions such as: What is the level of drop outs and its extent among various social groups (S.C, S.T and Gender)? What is the pattern of regional variations in drop outs and its incidence across various social groups? What are the various household and institutional factors responsible behind drop outs? The incidence of drop out is not an isolated event rather a process embedded within the socio-economic condition of the household and the institutional set up where a particular child belongs to. Social exclusion thus is related to lack of access to services and goods offered by society. Although State entails to provide services to all without any discrimination yet many are left without access to and utilisation of resources on account of the fact that social and religious groups appear to accentuate social exclusion by denying certain opportunities pertaining to social and religious practices and access to educational services. While explaining determinants of drop out, this study instead of taking account the off-repeated frame work of child labour-poverty debate gives more emphasis on others institutional factors (provision of various component of educational infrastructure) which gel along with household factors to explain drop out and its extent. Hence the present study brings most of the household level and institutional determinants of drop out in a single frame. It uses data from MHRD (2007-08) and District Information System for Education (2007-08). The study explores that the incidence of drop out is still widespread in India and the States having incidence of drop out more than national average, such as, West Bengal, Bihar, Jharkhand and Orissa and some of the North-Eastern States reflects a characteristic pattern forming a contiguous belt. States with high dropouts do reflects poor performance across various parameters of human development. Thus inequality in access stands to be the most important mechanism explaining the dynamics of social exclusion in India.*

**KEYWORDS**

Social Exclusion, Drop out, Elementary education, Household Determinants parental education, household economic condition.

**INTRODUCTION**

Normative schools of thought believe that arrangement of the social order in a society is based on freedom, equity and justice. Theory of Social justice put forward by John Rowels, states that 'State should ensure universal access to social primary goods'. Education is perhaps the most important social primary good. Moreover it assumes primary significance in perspectives of human capital, human development and human right. The educational deprivation among certain social groups in India makes the goal of inclusive growth an elusive one.

Several policy measures have been taken towards educational development in general and child schooling in particular. Universal elementary education (UEE) where by all children of age 6 to 14 years irrespective class, caste, gender affiliations must complete eight years schooling i.e. elementary level has become national project in India. Several schemes have been launched with times specific target to reach the goal of UEE. But the achievement till date suggests that the goal of UEE in India still is a distant dream.

Incidence of drop out which is popularly termed as wastage of school going stock of child is one of the major burden behind UEE in India. According to MHRD Report (2007-08), more than 13 million children, comprising 6.94% of the child population under the age of 6-14, remain out of school. Moreover this phenomenon is prominent in terms of region, location, caste, gender and poverty in India.

In this context the present study attempts to explore the patterns and determinants of drop out at Elementary Level in India. This paper tries to address some specific questions such as: What is the level of drop outs and its extent among various social groups (S.C, S.T and Gender)? What is the pattern of regional variations in drop outs and its incidence across various social groups? What are the various household and institutional factors responsible behind drop outs?

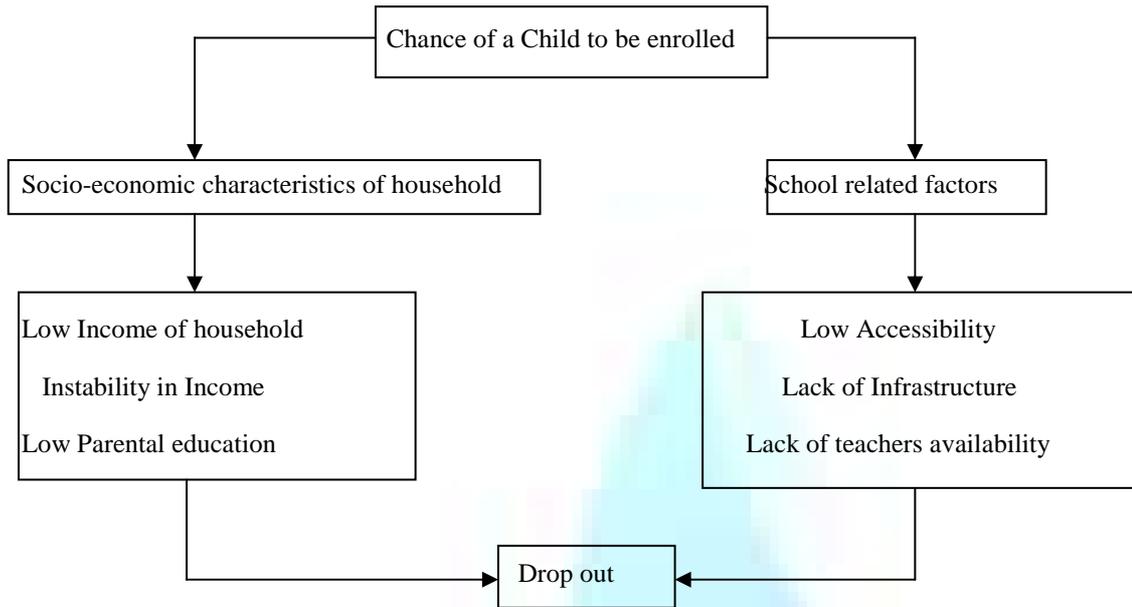
**CONCEPTUAL FRAMEWORK OF THE STUDY**

Where there is no literature available which covers the subject of drop outs, where if drop out is dealt as central theme. More frequently drop out as very phenomenon is embedded with in studies which massages around drop outs set alongside others on access more generally. Few studies account for access and interactive, dynamic nature of factors which may contribute to dropping out. Rather much of available literature identifies one factor or possibly more leading to drop outs which is identified as final push or pull out of schools, which is less seen in literature are the processes around dropping outs.

All the responsible processes such as the personal attributes of children, household conditions and more specifically socio economic context which are interacting in a different way to drop out or bring in a single frame. In this context social milieu has a profound role on schooling of a child mainly because educational decision of a child in family are largely govern by it in India.

To quote John Dreze "literacy achievement in India depends crucially on social context: The Gender, division of labour, kinship system, and caste related norms economic entitlements and so on". It is very much evident that socio cultural religious economic, demographic factors play a vital role in enhancing or diminishing educational chances of a child. Based on the theoretical understanding chance of schooling or drop out of a child in India can be put it in as under:

**SCHEMATIC REPRESENTATION OF CONCEPTUAL FRAMEWORK OF THE STUDY**



**DATA SOURCE AND METHODOLOGY**

The present study is based on secondary data collected from two different sources, namely, MHRD report on drop out (2007-08) and DISE State Report Card (2007-08).

Several statistical tools like mean and standard deviation have been used to show trends and resulting variations in drop outs.

**ISSUES AND HYPOTHESIS**

In spite of the strong and persistent efforts of the Government ever since independence has seen drop out as serious constrains behind UEE in India. There is a range of literature which deals with the issues and problem of access, addresses drop out as one of the factors. Looking at the interplay of demand and supply factors and how they inter relate to the issues of drop outs, factor stated as under throw light on the dynamics governing drop outs and child labour argument. The review is organized around the research questions, with the first sections looking at demand and supply-side factors influencing drop out. Categories in this section emerged from the literature and have been grouped for purposes of convenience. They include issues such as financial constraints on households with regard to schooling, motivations behind schooling, socio-political contexts and school related supply-side factors.

**POVERTY AND INCOME CONSTRAINS**

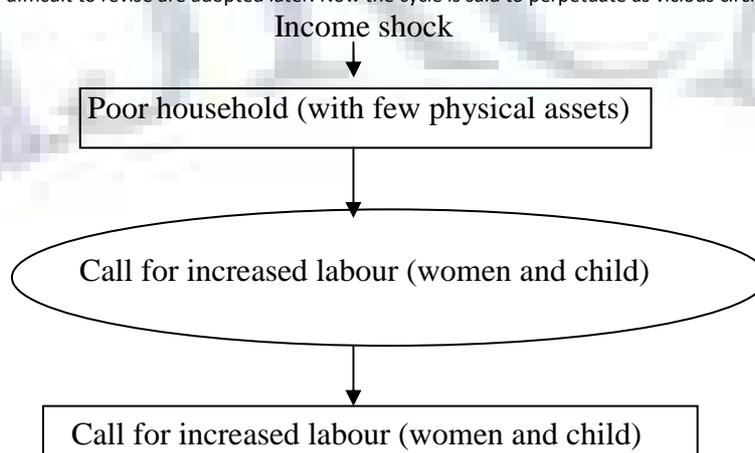
Household income is the most often cited reason determining access to education. Cost involved can be broadly classified into direct cost along with wide array of indirect costs such as cost of uniform, travel, equipment and the opportunity cost of sending a child to school. Opportunity cost being the cost foregone in terms of the next best alternative, which becomes high along with the time horizon, stands in conflict with the retention issues. Income thus has a profound influence on the factor influencing when the child starts going school, how often they attend, their temporary withdrawal and when if they drop out. In an economy thus being characterised as agrarian, under developed economy, difficulties in paying the indirect cost in times of poor harvest or times prior to harvest along with the cost denting the pocket of households to buy exercise book, pens and necessary clothing also influence whether child could enrol or were withdrawn from first grade.

Even if schooling is rendered free of cost in terms of fee, study has illustrated that additional cost in terms of registration process (gaining birth certificate etc.) are taxing.

Thus schooling cost being linked with

- Gendered pattern of access, parents less willing to pay fee for girl child's education.
- Child labour and resulting drop outs

Thus income shocks indicating further vulnerable household to withdraw their children from school as a part of coping strategy to deal with such shocks. Often in order to work, save costs or free other household members up to work. This vulnerability becomes more pronouncing in context of poor or rural communities. Such income shocks coping mechanism often adopted pertains to first resorting to strategies which have little long term cost, are adopted first, while strategies with long term costs that are difficult to revise are adopted later. Now the cycle is said to perpetuate as vicious circle of poverty in a manner as under:



This continues over generations as temporary withdrawal which leads to more permanent drop outs. Relationship between child labour and poverty: the type of work a child does, household structure, education access and work as to whether child work hinders or helps access to schooling inducing retentions, gendered and location aspects of work are broad areas where by nature of child labour has been extensively examined by various researches. Thus it's a case where factors interact severely with each other to such a great extent that it is difficult of precisely talk about causal determinants around complex and household specific decisions and attributes.

This is a case where poverty, gender, location, household educational levels, household income and season combine to interact with the child labour and influence access to education. As illustrated in many cases girls have more duties than boys and particularly in rural household children in particular and girls in specific, have to combine work with school and in case of urban areas, its either or. But defining child labour becomes important while studying the problem of poverty-child labour retention. According to PROBE Team 1999, the most prevalent types of child labour of that being domestic and household related duties (girls) and agricultural labour (boy), most stands to be unpaid, under recognised, time taking. Labour of such sort does not impede much with educational access. But further studies have shown children combining work with school, can result into erratic school attendance, regular school absences, with children frequently combining household/agricultural duties with some schooling.

Temporary withdrawals such in case of seasonal employment requirements and along with on-going education access, low attendance are seen as leading to more permanent withdrawals from schools and resulting drop outs. Reason was being, children falling behind due to regular absences, temporary withdrawals and heavy pending school load, if ignored than those who attend, fail to engage in effective learning processes.

It is interesting to note that while poverty is stated as the prime reason or perhaps the driving force behind child labour and resulting drop out, there are reasons which go beyond poverty-child labour debate.

- *Pull factors of the job markets v/s push factor of poverty*

PROBE Report 1999 suggests children work because they are unable to go school, as opposed to dropping out of school in order to work. Many researchers conclude that it is the buoyant job market and ability to earn good money a motivating force behind decisions to leave school. Highlights pull of the labour market as opposed to the push of the poverty is main factor behind decision to leave school. The more vibrant the local job markets the more vibrant drop out figures.

- *Household work pattern/structure: a case for gendered access*

If the mother associated with the formal wage economy, it is often associated with the suppressed educational access at the disposal of their daughters on account of more household chores to a girls credit and resultant less time to go school. Studies also go to the extent indicating that the girl child usually drops out of the school to look after their siblings at home. Moreover presence of siblings less than six years has shown increased probability of the older siblings to work and not go to school. It is seen that each additional younger sibling certainly reduces that chances of elder girl child to go school. Thus the educational access and child labour gendered, frequently girl child is the most affected. In such a process rural girls are relatively worse than their urban counterparts.

- *Migration*

On account of the nature of the poor and deprived groups catering to the informal sector of the economy, migration is one such factor linked with reduced access to education. Children living in urban squatter settlements, rural urban migration, job search, seasonal employment deter access to schooling. Research on the rural urban migration and household migration indicates that three time more migrants children are out of schools that the non-migrant children. According to the parents of the migrant drop outs, it is the often over crowded urban schools which are reluctant to entertain rural influx on account of infrastructural and quality issues.

- *Dynamism of decision maker around dropping outs*

The decision making activities is actually amalgam of social cultural and economic factors working through power relation of the households. Stronger the bargaining power of the family member, the stronger the influence it will have on the allocation of the allocate resources of the household. Now the bargaining power of the household if often lopsided, favouring the males in the family. Liu (2004) categorised parents on the basis as under- Supportive of children dropping out, Indifferent of children dropping out, Opposed to the children dropping out. The parents falling in the first classification are those in many cases, lack hope both on part of parents and the child to see school as a potential avenue.

Moreover the decisions are also governed by rational choices on the part of the parents who see rational decision on part of them by not sending their children school as not being economically and socially not profitable.

- *Gender explaining drop outs*

Boyle et al demonstrated in their study of households reveal that boys are seen to bring future stream of income out their parents whereas girls are not invested in terms of educational investment, are not wanted as the returns occurring to them will be realised to their in laws.

## NATIONAL SNAP SHOT OF DROP OUT

This section focuses on tracing the incidence of the drop outs in India. An attempt has been made to capture the group inequalities across various sub population groups in India. Given the importance of gender (boys/girls), caste (S.C, S.T and others), children's are categorised into nine mutually exclusive sub population groups. From the table as under, it can be inferred that 45.9%of the out of schools are actually discontinued their schooling in India. When the same is seen in terms of gender, girls are actually more deprived as compared to their boy counterparts. Incidence of drop outs is 45.44% for boys as compared to 46.22% for girls.

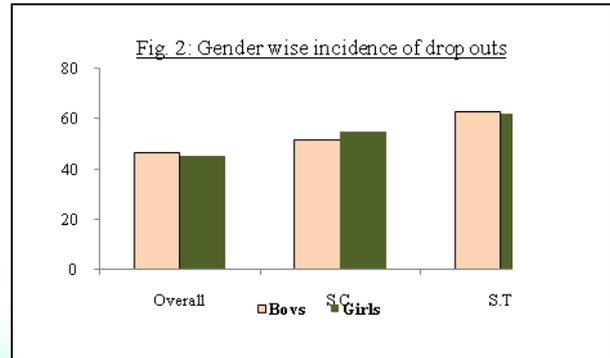
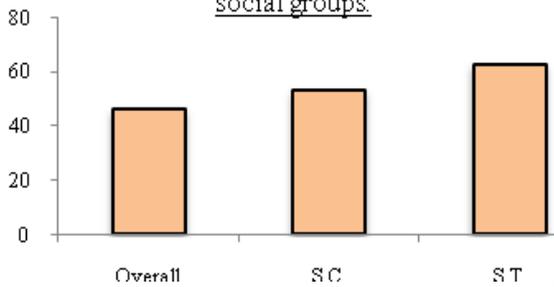
TABLE 1: NATIONAL SNAP SHOT OF DROP OUTS

Level	Boys	Girls	Total
Overall	45.44	46.22	45.9
S.C	51.56	54.98	53.05
S.T	62.22	62.78	62.54

Source: Selected Educational Statistics, MHRD, 2007-08

The further classification on the basis of scheduled caste and scheduled tribe presents a fairly grim picture with drop outs of the S.T being much higher than the national average (62.54% as compared to 45.9%). The state of S.C's (53.05%) though being less than the national average is slightly better than that of S.T's. girls belonging to S.C's and S.T's do face the double fold jeopardy of being girls and belonging to historically deprived community of India. As evident from 54.98% drop out for S.C girls against 51.56% for boys and 62.78% for S.T girls as compared to 62.22% in case of S.T boys.

Fig 1: Incidence of drop outs among various social groups



**BASED ON THE DISCUSSION ABOVE IT CAN BE SUMMARISED AS FOLLOWS:**

- The incidence of drop outs varies across various social groups where by highest incidence is observed for the most deprived community i.e. S.T followed by S.C.
- Girls are found to be educationally more deprived than boys as the incidence of drop out is high among girls than in boys. The trend is consistent or become even worse across sub population group.

**REGIONAL VARIATIONS IN DROP OUTS**

**OVERALL**

The incidence of drop outs is not homogenous in India. There exist wide spatial variations in the incidence of drop outs across various states in India. This section makes an attempt to capture the regional variations in drop outs. For this purpose the states are classified into five categories (see table). It's interesting to note that maximum of states belong to very low (25.71%) and very high category (22.86%) followed by moderate and low (20% for each) 11.43% in high incidence category. The concentration of the state in the two extremes of the incidence category clearly indicates the existence of wide spread disparities in educational achievements across various states in India. States like Bihar, Jharkhand, Orissa, West Bengal, Rajasthan and North Eastern states like Assam, Meghalaya, Manipur belong to high incidence category and educationally developed sates like Tamil Nadu, Kerala, and Goa register very low incidence of drop outs.

**TABLE 2: REGIONAL VARIATION IN DROP OUT (OVERALL)**

Levels of Drop Out	No. of states	Percentage of States
Very High (More than 60%)	8	22.86
High (50-60 %)	4	11.43
Moderate/ National Average (40-50 %)	7	20.00
Low (10-40 %)	7	20.00
Very Low (Less than 10%)	9	25.71

Source: Author's own calculation from Selected Educational Statistics, MHRD, 2007-08

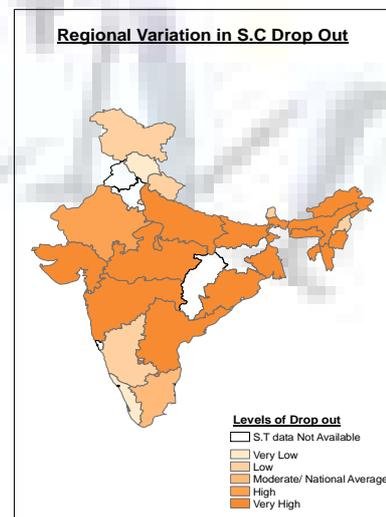
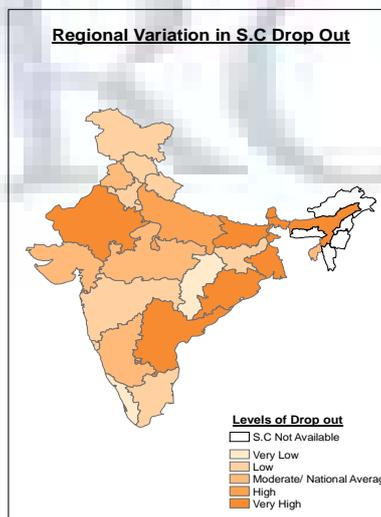
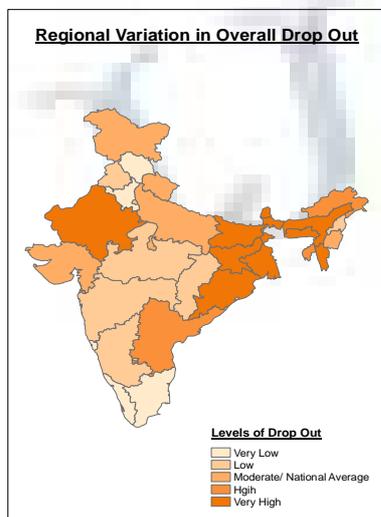
**ACROSS VARIOUS SOCIAL GROUPS**

The incidence of drop out for eight states in India under the category , very high (with 25.00% states ) and high(with 3.57% ) report if taken together drop outs higher than the national average of (40-50% drop outs) for 21.43% of states. Though states falling in the category of low (35.7% states) and very low (14.29% states) drop outs accounts for total 14 states which represents drop outs lower than the national average.

**TABLE 3: REGIONAL VARIATION IN DROP OUT (S.C)**

Levels of Drop Out	No. of states	Percentage of States
Very High (More than 60%)	7	25.00
High (50-60 %)	1	3.57
Moderate/ National Average (40-50 %)	6	21.43
Low (10-40 %)	10	35.71
Very Low (Less than 10%)	4	14.29
N.A	7	-

Source: Author's own calculation from Selected Educational Statistics, MHRD, 2007-08



The traced incidence for drop out falling under the very high category (with 42.86% states) and also in high category (with 7.14% states) represents together drop outs fairly high than the national average (10.71%). States under the category of low and very low (28.57% & 10.71%) drop outs represents drop out fairly low as compared than the national average (10.71%).

TABLE 4: REGIONAL VARIATION IN DROP OUT (S.T)

Levels of Drop Out	No. of states	Percentage of States
Very High (More than 60%)	12	42.86
High (50-60 %)	2	7.14
Moderate/ National Average (40-50 %)	3	10.71
Low (10-40 %)	8	28.57
Very Low (Less than 10%)	3	10.71
N.A	7	-

Source: Author's own calculation from Selected Educational Statistics, MHRD, 2007-08

**SPECIAL FOCUS ON INCIDENCE OF GENDER DISPARITIES IN DROP OUTS**

Overall

Though India has been successful in its effort to address the issue of gender disparity largely where by 62.86% states reporting no gender disparities (0.01-0.90), still startling disparities exists and continue to perpetuate with only three states(8.57%) reporting a case for male deprivation as compared to six states(17.14) stating a case for female deprivation.

TABLE 5: GENDER DISPARITY OVERALL DROP OUT

F/M Ratio	No. of States	% of States
No Out of Schools	4	11.43
More Male Derived ( 0.01-0.90)	3	8.57
No Gender Disparity (0.90-1.10)	22	62.86
More Female Deprived (More than1.10)	6	17.14

Source: Author's own calculation Selected Educational Statistics, MHRD, 2007-08

**GENDER DISPARITY IN DROP OUTS ACROSS SOCIAL GROUPS**

Largely the case for gender equality in case of S.C is as low as 48.39% at the national level. The incidence of drop for S.C girls is more glaring (with 25.81% of the states) as compared to S.C boys (with 16.13% of the states). Traces of drop outs are virtually absent for 9.68% states in India.

TABLE 6: GENDER DISPARITY S.C DROP OUT

F/M Ratio	No. of States	% of States
No Out of Schools	3	9.68
More Male Derived ( 0.01-0.90)	5	16.13
No Gender Disparity (0.90-1.10)	15	48.39
More Female Deprived (More than1.10)	8	25.81
Not Available	4	-

Source: Author's own calculation Selected Educational Statistics, MHRD, 2007-08

The incidence of drop out for the S.T at the national level stands high (57.14%) with girls drop out accounting for 28.57% in contrast to boys drop out being 10.71% only. The figure for the no out of school children is also as low as only 3.57%.

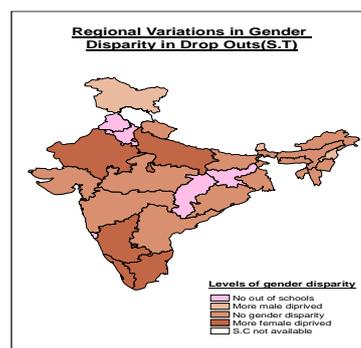
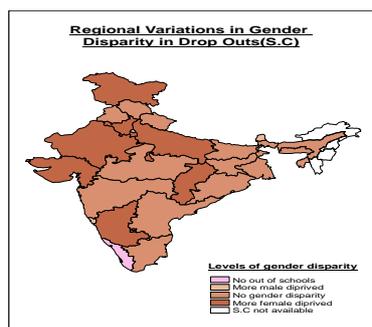
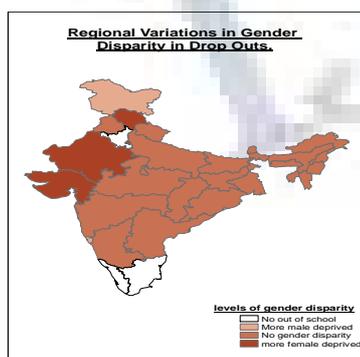
TABLE 7: GENDER DISPARITY S.T DROP OUT

F/M Ratio	No. of States	% of States
No Out of Schools	1	3.57
More Male Derived ( 0.01-0.90)	3	10.71
No Gender Disparity (0.90-1.10)	16	57.14
More Female Deprived (More than1.10)	8	28.57
ot Available	7	-

Source: Author's own calculation Selected Educational Statistics, MHRD, 2007-08

Based on the discussion above it can be summarised as follows:

- As compared with the national average of 62.86% states reporting gender equality, the case for S.C (48.3% of the states) and S.T (57.14% of states) is significantly low than national average.
- At the national level (17.4%) and for S.C (25.8%) and S.T (28.57%) in specific, girls are more deprived as compared to the boys.



**DETERMINANTS OF OUT-OF-SCHOOLS**

Research into the factors which are responsible for dropping out of children from school considered both demand and supply factors. Most of the available literature highlighted amalgam of household level constrains and that at institutional level such as, income of the household, parental motivations, educational level of the parents especially, mothers education as a major demand side and availability of school, availability of adequate classroom, presence of female teacher, toilet facilities within the school etc. as a prime supply side determinants of schooling of children in India.

**HOUSEHOLD LEVEL DETERMINANTS**

Household is the basic decision making unit for schooling of children. Therefore, household characteristics are of prime relevance in determining the schooling opportunities of children. In this study income of the household and parental education of the head of the household considered as the influential household factor behind drop out.

**TABLE 8: LINKING VARIOUS LEVELS OF DROPOUTS WITH ITS DETERMINANTS**

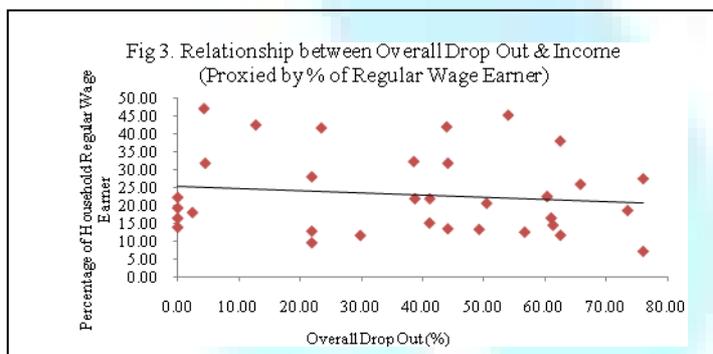
	I	II	III	IV	V	VI	VII	VIII
Very High (More than 60%)	66.63	20.22	54.17	34.02	18.52	73.20	34.33	41.78
High (50-60 %)	53.77	26.15	55.93	33.47	23.40	73.47	23.33	30.00
Moderate/ National Average (40-50 %)	44.01	22.92	56.85	43.10	35.08	81.25	30.17	29.33
Low (10-40 %)	26.16	25.06	61.41	48.79	43.53	83.55	30.88	36.25
Very Low (Less than 10%)	1.60	24.11	69.11	58.47	55.61	90.60	26.71	25.57

Source: Author's own calculation Selected Educational Statistics, MHRD, 2007-08 and DISE, 2007-08

**INCOME OF THE HOUSEHOLD**

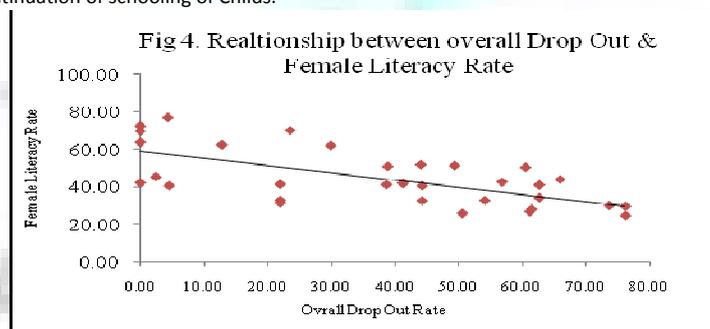
Household income is found to be an important factor in determining access to education as schooling potentially incurs a range of costs, both upfront and hidden. Upfront costs include schools fees, while, more hidden costs include costs of uniforms, travelling, equipment's and opportunity costs of sending a child into schools. Hence, low income particularly poverty act as burden to send child into the schools. A number of studies highlighted the direct links between the poverty and children out-of -schools. Porteus et al while discussing exclusions pointed poverty as the "most common primary and contributory reason for student to be out-of-schools."

The present study used percentage of household heads who are regular wage earner as a proxy to levels of income of the household. It has been found that directionality of association between these two variables is negative. The average dropout rate in the Very High incidence group is 63.63% against 20.22% household heads are regular wage earner where as it is only 1.60% drop out for 24.11% of the household heads are regular wage earner. But the association between income and the drop out is negative and significant but not as strong as it is thought to be. Some aspects of this weakness is very clear, for example, percentage of household head who are regular wage in High incidence group is 26.15% where as it is 20.22% in Very High incidence group.



**PARENTAL EDUCATION**

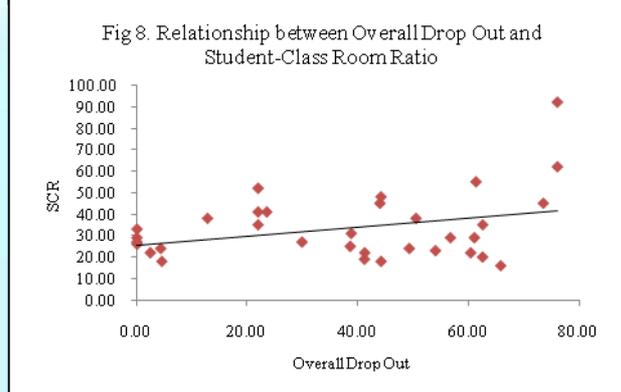
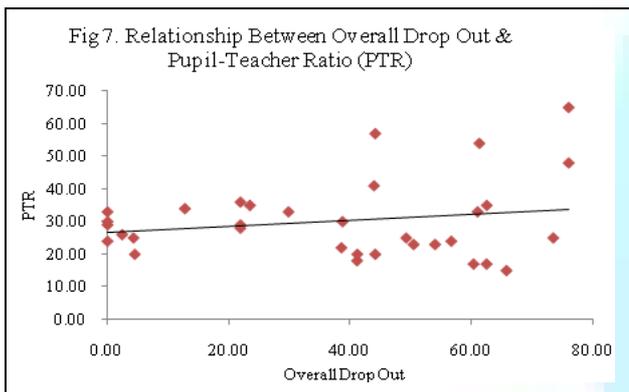
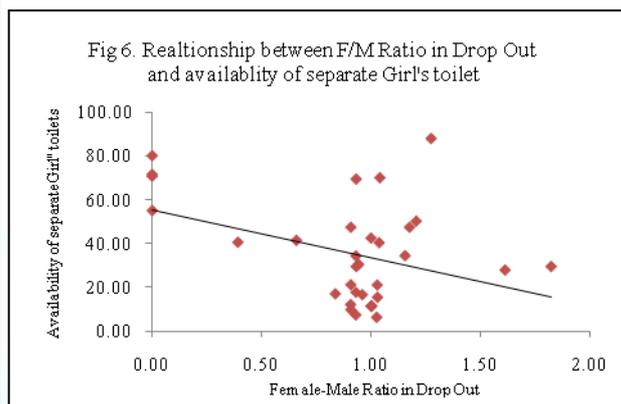
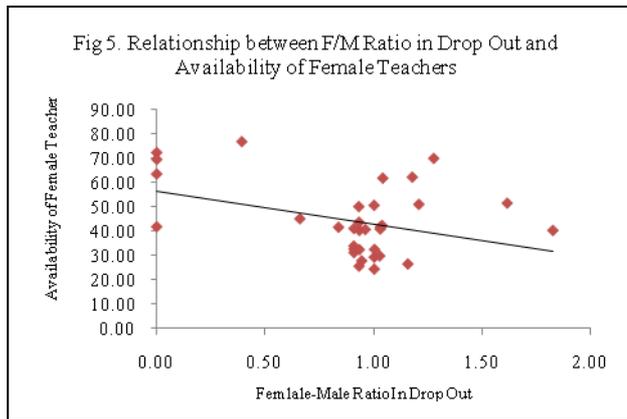
Schooling of children largely dependent on how parents perceive education and hence research indicates that educational level of the household member is particularly influential in determining whether and how long children access to schooling. Higher parental education is associated with the increased access to schooling and lower dropout rates. In the present study the impact of parental education on drop out has been tested on the basis of the correlating drop out with the percentage of female literacy. The average female literacy rate in the Very high incidence of drop out category is 54.17% and increases continuously towards the low magnitude of drop out groups and is 69.11 in the Very Low incidence of drop out category. Hence, it is clear that education particularly female education has profound impact on continuation of schooling of Children.



**SUPPLY SIDE DETERMINANTS OR SCHOOLS RELATED FACTORS**

Accessibility of schools, physical resources and the human resource availability of schools are also important determining factor behind child schooling. Educational access can be restricted by inadequate supply of schools. The lacks of schools availability not only affect the initial access but also the retention of child in the schools. Distance to schools being an important determining factors for educational access, particularly for girl children in India. Availability of adequate teacher, adequate class rooms and toilets are other important determinants of child's retention.

Here, the impact of the supply side aspects has been tested by associating percentage of female teacher's availability, percentage of schools having separate girl's toilets, Pupil-Teacher ratio and Student-class Room ratio with the dropout rates. It has been found that availability of female teachers and the percentage of schools with having separate girl's toilets, percentage of schools having drinking water facility are negatively associated with drop outs while availability of teacher and the availability of classroom are positively associated with out-of-schools. The availability of female teachers and the percentage of schools having separate girl's toilets, percentage of schools having drinking water facility are keep on increasing trend as the incidence of drop out decreases whereas the availability of teacher and the availability of classroom are maintained decreasing trend with increasing drop out.



**CONCLUSION**

The persistence of drop out makes the goal of Universal Elementary Education least inclusive. The observation above reveals that there is a wide range of factors at both household level and at the institutional levels which determine the dynamics of retention and explains resulting drop outs. There exists a need versus right debate towards the right to education being availed in context of economic or basic need of such households. Factors such as poverty, child labour, migration, rational decision making process, gender along with socio religious factors gel together to explain the extent of drop outs. As explained by Naila kabeer in her argument of the intergenerational contract, the decision to educate a child represent a significant shift in the intergenerational contracts for reasons such as it requires parents to make a substantial investment of limited resources and to postpone perhaps by several age the age at which child could behave as earning member of the family. For a family thus surviving on margins find it difficult to engage in such postponement. Institutional factors demonstrate that there exists a vast social and cultural distance between the world of school which is largely run by members of the privileged section of the society and children of lower cast/tribe or minority. Besides universalization of elementary education, access is deterred by the problems of selective exclusion and inclusion. Exclusion is thus partly a sheer case of poverty, partly of the unresponsiveness of the schooling system on offer, partly one of the social discrimination on the basis of cast, and gender and partly one of the cultural factor of that being tribe and religion. Along with such attitudinal factors, infrastructural constrains such as lack of class rooms, female toilets, female teachers, distance from home to school are significant factors explaining the drop outs, its extent and trends.

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**APPENDIX**

**APPENDIX 1**

I. Overall Drop out II. Regular Wage Earner III. female literacy IV. % of female teachers V. Percentage of schools with girl's toilets VI. Percentage of schools with drinking water facility VII. PTR (Pupil-Teacher Ratio) VIII. SCR (Student-Class Ratio)

**APPENDIX 2**

To understand the interstate variation in proportion of male-female disparity in Drop Out *Ratio Method* has been used. It is as followed,

$$G.D = \frac{T_f}{T_m}$$

$T_m$  = Total male Drop Out

$T_f$  = Total female Drop Out

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