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*M. Venkata Ramanaiah and  
C. Mangala Gowri*

Measuring Personality Traits: Need for a New Instrument

*Bushara Bano and  
Parvaiz Talib*

A Study on Mobile Phone Usage Pattern of College Students in Sivakasi, Tamil Nadu

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Mutual funds with evidence to Moradabad

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Effect of Derivative Trading on Stock Market Volatility: A Study of Indian Capital Market

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The Effect of Peers on Delinquent Acts Committed by Juveniles:  
A self-reported Survey of Delinquency in Omani Society

*Salim Abdullah Al-Bas*

## BOOK REVIEWS



**Shobhit  
University**

Shobhit Institute of Engineering & Technology, Meerut  
A University declared by Govt of UGC Act 1956

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# SHOBHIT UNIVERSITY, MEERUT

**Shobhit University**, notified by the Government of India as a Deemed to be University, under Section 3 of the University Grants Commission Act, 1956, was envisaged and inspired by Babu Vijendra Kumar ji, an eminent agriculturist and social worker from Gangoh (Saharanpur) of U.P. The University seeks to go beyond the established standards to nurture technocrats and prospective managers that have a global vision and insight in their chosen field. School of Business Studies

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## NICE JOURNAL OF BUSINESS

*NICE Journal of Business* is a half-yearly journal, earlier published by NICE Management College, Meerut, and now brought out by the School of Business Studies, Shobhit University, Meerut. It provides a platform to research scholars, practising managers, and academicians in business management, commerce, economics, and allied fields, to present their research findings and share their views and experiences.

The Journal aims at disseminating research output and providing information about recent developments in the relevant fields, by way of research articles, book reviews, Ph.D. thesis abstracts, case studies, and bibliographies, on topics related to business and allied areas. It is listed in Cabell's Management Directory (USA).

Original contributions received for publication in the Journal are subjected to a blind review, by experts in the relevant fields.

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# From the Editor's Desk

We are extremely happy to inform you that, we are successfully coming out with the fifteenth issue of 'NICE Journal of Business'. It is always our dream that we should publish a high quality research output in the areas of business, finance and management. In this endeavor, we profusely thank all the authors of research articles for making this objective possible. It is fascinating to see that all the research articles are contemporary and relevant. This was ensured by the quality of manuscript received that was thoroughly blind peer reviewed.

As in earlier issues a number of very interesting papers are highlighted this time too. The research paper titled "Electronic Banking and Its Vision 2020, by M. Venkata Ramanaiah and C. Mangala Gowri have studied the development and advancement of banking sector in terms of usage of technology and explain the role of banks in India by the year 2020 taking into account, the second generation reforms in our country. The research paper on "Measuring Personality Traits: Need for a New Instrument" by Bushara Bano and Parvaiz Talib, deliberate the conceptual development of the personality theories and the need for a new instrument for measuring personality traits of individuals that is holistic in its approach. In recent years technology of mobile phone is on a progressive path with fast speed. Seeing the importance of the subject M. Selvakumar, K. Jegatheesan and K. Manikandan took a study to analyse the usage pattern of college studies in Shivakashi. The research paper titled "How masculinity can affect the patron decision while investing in Mutual funds with evidence to Moradabad" by Mohit Rastogi and Mitali Agarwal, highlights the gender differentiation while investing in mutual funds and investment security to the investors, especially female investors. The research paper titled "Effect of Derivative Trading on Stock Market Volatility: A Study of Indian Capital Market by Peeyush Bangur, Sandeep Malu and Pratima Jain discusses the behavior of volatility of stock market after introduction of futures by using GARCH (1, 1) model. Their results reveal that the introduction of derivatives does not have any stabilizing (or destabilizing) effect in terms of decreasing (or increasing) volatility. The research paper titled "Identifying and Ranking Factors of Customer Experience and Its Role in Shaping Customer Satisfaction" by N.L. Gupta and Meenakshi Chandok, demonstrates that customer experience is driven by fourteen factors, which directly or indirectly lead to customer satisfaction that helps in building customer trust and customer loyalty Researchers S. Buvnendra, P. Sridharan and S. Thiyagarajan, present interesting findings in their paper on "The Impact of Macroeconomic factors on Capital Structure-Evidence from Sri Lankan Listed Firms" regarding the impact of macroeconomic factors on capital structure choices of Sri Lankan firms. The research paper titled "Soldier Family Stress" by S.S. Chauhan and A.P. Choudhary has brought out the various social measures to deal with stress of soldiering that will improve the psychological health of troops.



Sunita Mehla and S.K. Goyal in their research on "Investigation of Causality between Institutional Investment and Indian Stock Market: An Empirical Study of FII's and MFs" attempt to analyze the short term and long term causal relationship between institutional investment and returns in the stock market of India and finally conclude that institutional investment leads the Indian stock market.

The research paper titled "Training for the Future" by Jagbir Singh Dhull, concluded that the present outdated training concept should be validated and emphasized the need to train for the future. Meenakshi Sharma and D.S. Chaubey reveal in their research paper titled "An Empirical study of Customer Experience and Its relationship with Customer satisfaction towards the services of banking sector" that happier employees are more likely to stay in the organization for long and are better is their productivity and give more satisfaction to the customers. The research paper titled "Supervisor Support as Mediator of Association between Role Clarity and Organizational Citizenship Behaviour (OCB)" by Mohit Yadav and S. Rangnekar, examines the relationship between Role Clarity, Supervisor Support and OCB and attempt to bridge the gap in the literature from India and other developing economies. The research paper titled "The Effect of Peers on Delinquent Acts Committed by Juveniles "A self-reported Survey of Delinquency in Omani Society" by Salim Abdullah Al-Bas, attempts to address the problem of juvenile delinquency in Oman, its nature, causes and its solution.'

I take this opportunity on behalf of NICE Journal of Business' to sincerely appreciate the time and energy put in by our eminent authors and the Editorial Board for their tremendous patience and yeomen contribution to the success of this Journal. We have, some outstanding experts who as research paper reviewers and book-reviewers have spared their invaluable time to extend their advice and guidance with their critical comments and suggestions that improved the quality of the Journal. Indeed I have no words to express our thanks to Professor D.P.S. Verma who laid the foundation of the Journal and who ensured in no less a measure that the quality of the contents and its research output is not diluted for all time to come. To him and to many of our esteemed Members who have left no stone unturned to make a fool proof peer-reviewed refereed process mandatory for regular publication of the Journal and its listing in Cabell's Directory (US) over the years I owe our deep sense of gratitude.

I express our profound gratitude to Chairman Dr. Shobhit Kumar, Chancellor Kunwar Shekhar Vijendra, who has always been a guardian star behind the endeavor. My gratitude is to Vice Chancellor Professor Rajendra P. Agarwal and the entire Editorial Team who have over the years worked very hard to make the entire enterprise a resounding success.

  
Anoop Swarup  
Chief Editor



# Electronic Banking and Its Vision 2020

M. Venkata Ramanaiah\* and C. Mangala Gowri\*\*

## Abstract

*The last two decades have witnessed a rapid change in the banking sector services across the globe. One must thank the concept of Liberalisation, Privatisation and Globalisation (LPG) which helped banks to a great extent to grab the new opportunities opened cut across national boundaries. There is a close correlation between the development of banking sector and the new innovations in Technology, Telecommunication, and Electronic data processing. In this research paper, an earnest attempt has been made to assess the development and advancement of banking sector in terms of usage of technology. Further, this article attempts to visualise the greater role the banks are expected to play in India by the year 2020 taking into an account of second generation reforms.*

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**Keywords:** E-Banking, Technology, Stock Market, Social Money, Vision 2020

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## INTRODUCTION

Banking in India originated in the last decades of 18th century. The first banks were the General Bank of India, which started in 1786, and Bank of Hindustan which started in 1790; both are now defunct. The oldest existing bank in India is the State Bank of India. In order to have more control over the banks Government of India decided to nationalise 14 commercial banks in 1969. The main motive behind this was to pump more funds in priority sector. Then again in 1980, 6 more commercial banks were nationalised. Due to nationalisation of commercial banks Government of India started controlling around 91% of the banking business in India. The Government of India, under the chairmanship of Mr. M. Narasimham appointed the

Narasimham Committee-I and II in April 1991 and 1997 respectively. After examining a variety of problems and prospects of banking sector, it made a wide range of recommendations for improving financial viability of the banks and increasing their autonomy from government directions, restructuring unviable banks, allowing a greater entry of the private sector in banking, liberalising the capital market, further improving the operational flexibility and competition among the financial institutions and setting up of proper supervisory system. Further, it recommended strengthening banking system, systems and methods of banking, structural issues, integration of financial markets, rural and small scale industrial credit and regulation and supervision.

Currently, India has 96 scheduled commercial banks (SCBs)—27 public sector banks, 32 private

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banks and 38 foreign banks. They have a combined network of over 53,000 branches and 17,000 ATMs. According to a report by ICRA Limited, a rating agency, the public sector banks hold over 75% of total assets of the banking industry, with the private and foreign banks holding 18.2% and 6.5% respectively.

## REVIEW OF LITERATURE

Arora opined that technology plays a definite role in transformation of banking sector. Further, he stated that the impact of technology implementation has resulted in the introduction of new products and services by various banks in India.

According to Bakshi good governance is of interest not only to an individual bank but also to the society in which it operates—the basic objectives being protection of depositors and safeguarding the integrity and soundness of the system.

Mohan expressed his views regarding the transformation in Indian Banking that if Indian Banks are to compete globally, the time is opportune for them to institute sound and robust risk management practices. Ram said that business is being completely reinvented because transaction costs are much lower on the Internet than in traditional channels. The banks are rapidly shifting their business functions and customers relationships on to the Web.

Sandh, in his paper, analyses the impact of IT and particularly e-delivery channels on the performance of Indian banking system. The paper also highlights that ATM is a major e-delivery channel, which is used mostly in the metropolitan and urban cities. The paper concludes that those banks, which are using e-delivery channels, are providing better services than the other banks. Shapiro studied the effects of cyberspace on efficiency and productivity of banks. He also analysed the nature of bank transformation. Trivedi has rightly said that Indian Banks have always proved beyond doubt their adaptability to change and it would be possible for them to mould themselves into agile and resilient organizations by adopting fine-tuned CRM strategies, operations based on asset-liability and risk management systems, the

required technological capabilities and developing human resources to meet the challenges of the paradigm shift. Vittal concludes that overall profitability of banks has been under constant strains during the study period except between 1970-74 and downfall is experienced between 1970-1974. Because in India, IT is in an infant stage and very less comprehensive studies are conducted. Some articles or research papers have appeared in different journals. The review of literature on various aspects of bank transformation concludes that transformation is taking place and IT is playing vital role in bringing this transformation and it is the need of the hour to manage this transformation with IT.

## RESEARCH METHODOLOGY

### Research Problem

It is evident that there is a sea change in the operations of banking sector in India. The boost in the Indian economy vis a vis world economy created unaccountable opportunities in every sector not just in the banking sector alone. However, all attempts have been made by the policy makers to strengthen banking sector by using information technology to the maximum so that every need of the customer can be taken care of in a professional manner. Having said this, it is evident that it is only one side of the coin. On the other side have problems like misuse of technology, internet financial frauds, and online hackings of accounts, etc. In this context, it is felt that there is a great need to look into the pros and cons of e-banking in order to overcome shortfalls and visualise how will be the e-banking by 2020.

### Objectives of the study

The primary objective of the study is to evaluate the development and advancement of e-banking after post liberalisation period in order to discuss pros and cons of e-banking during the same period. Along aforesaid, we have the following specific objectives:

- i) To study the transformation of Indian banking system and its progress towards e-banking during the study period;



- ii) To evaluate various information technology tools which smooth the progression of banking sector to reach out to its end result; and
- iii) To visualise the future of banking sector by 2020

### Source of Data

To reach out the objectives of the study it is intended to work on secondary data only. The required has collected from textbooks, referred journals, published and unpublished literature and websites on the subject.

### TRANSFORMATION OF BANKING SYSTEM

The new economic policy declared by the Government of India in 1991 gave birth to a new era in the Indian banking business. During the early 1990s, the then Narasimha Rao Government embarked upon a policy of liberalisation by licensing a small number of private banks. These were popularly known as 'New generation tech-savvy banks. The new policy shook the banking sector in India. The new wave ushered in a modern outlook and tech-savvy methods of working for traditional banks. All this led to the retail boom in India.

People not just demanded more from their banks but also received more, too. The IT revolution had a great impact in the Indian banking system. The use of computers had led to the introduction of online banking in India. The use of the modern innovation and computerisation of the banking sector of India has increased manifolds after the economic liberalisation of 1991 as the country's banking sector got an exposure to the world's market. At present, Indian banks are finding their way to compete with the international banks in terms of the customer service with the use of the information technology and computers effectively and efficiently.

### E-Banking

E-banking is defined as a method of banking in which the customer conducts transactions electronically via the Internet. E-banking includes the systems that enable financial institution customers, individuals of businesses, to access accounts, transact business, or obtain information on financial products and services through a public or private network. E-banking is said to be a part of e-commerce. So far e-banking includes three basic delivery channels, namely, Internet banking, telephone banking and other electronic delivery channels. During the recent years, the pace and quality of banking

**Table 1.** ATMs of Scheduled Commercial Banks (As on March 2011)

Bank group	On-site ATMs	Off-site ATMs	Total number of ATMs	Off-site ATMs as per cent of Total ATMs
<b>Public sector Banks</b>	<b>29,795</b>	<b>19,692</b>	<b>49,487</b>	<b>39.8</b>
Nationalised banks	15,691	9,145	24,836	36.8
SBI group	14,104	10,547	24,651	42.8
<b>Private sector banks</b>	<b>10,648</b>	<b>13,003</b>	<b>23,651</b>	<b>55.0</b>
Old private sector banks	2,641	1,485	4,126	36.0
New private sector banks	8,007	1,518	19,525	59.0
<b>Foreign banks</b>	<b>286</b>	<b>1,081</b>	<b>1,367</b>	<b>79.1</b>
All SCBs (I+II+III)	40,729	33,776	74,505	45.3

Source: Report on Trend and Progress of Banking in India- 2010-11, RBI, Mumbai, p. 91

sector has seen a massive change by due to the technological advancements made in this area. Computerisation as well as the adoption of core banking solutions was one of the major steps in improving the efficiency of banking services. The new private sector banks and most of the foreign banks, which started their operations in the mid-nineties followed by liberalisation, were the frontrunners in adopting technology. For old private sector banks and public sector banks, adoption of technology was an arduous job because of the historical records and practices. However, it is important to note that presently almost 98% of the branches of public sector banks are fully computerised, and within which almost 90% of the branches are on core banking platform. Further, introduction of automated teller machines (ATMs) enabled customers to do banking without visiting the branch. In 2010-11 the number of ATMs witnessed a growth of 24% over the previous year. However, the percentage of off-site ATMs to total ATMs witnessed a marginal decline to 45.3% in 2010-11 from 45.7% in 2009-10. More than 65% of the total ATMs belonged to the public sector banks as at end March 2011.

During 2010-11, the number of debit cards grew at the rate of 25% over the previous year. In sync with the trend observed in case of ATMs, nearly three-fourths of the total debit cards were issued by PSBs as at end March 2011. The share of PSBs in outstanding debit cards witnessed an increase during the recent years, while that of new private sector banks and foreign banks witnessed a decline over the same period. However, in absolute terms, the number of outstanding debit cards witnessed an

increase for new private sector banks during the recent years. The issuance of credit cards facilitates transactions without having to carry paper money. Despite the decline in the number of outstanding number of credit cards, the volume and value of transactions with credit card recorded a growth of 13% and 22%, respectively in 2010-11. New private sector banks and foreign banks accounted for more than 80% of the total outstanding credit cards as at end March 2011.

The electronic payment systems such as Electronic Clearing Service (ECS) credit and debit, National Electronic Fund Transfer (NEFT) for retail transactions and Real Time Gross Settlement (RTGS) for large value, improved the speed of financial transactions, across the country. Both retail and large value systems of electronic payment transactions registered a growth out of which NEFT registered a steep growth in 2010-11 over the previous year.

### Recent Initiatives

The Reserve Bank has set up a robust technology-based payment and settlement systems infrastructure with enhanced assurance of uninterrupted and efficient provision of services. Major policy initiatives taken during the year to further strengthen the payment and settlement system were as follows:

- i) Paper clearing express and express cheque clearing system;
- ii) Electronic payment systems;
- iii) Prepaid payment instruments;

**Table 2.** Volume and Value of Electronic Transactions by SCBs during 2009-11 (Volume in million, Value in crore)

Item/Year	2009-10		2010-11		2009-10		2010-11	
	Volume	% Variation	Volume	% Variation	Volume	% Variation	Volume	% Variation
ECS Credit	98.1	117.3	11.0	19.5	1,17,613	1,81,686	20.6	54.5
ECS Debt	149.2	156.7	-6.7	5.0	69,524	73,646	3.8	5.9
NEFT	66.3	182.3	106.3	99.5	4,09,507	9,39,149	62.5	129.3
RTGS	33.2	49.8	148.5	48.2	3,94,53,359	4,84,87,234	22.2	22.9

Source: Report on Trend and Progress of Banking in India- 2010-11, RBI, Mumbai, p. 93



- iv) Mobile banking transactions;
- v) Card based transactions; and
- vi) Automated data flow and New generation RTGS.

### Use of e-banking in India

The number of internet banking users has increased from 9% in 2003 to 50% in 2010 due to increase in Internet services. Multiple services can be offered through online banking such as: bill payment services, fund transfer, railway ticket booking, etc.

As part of implementation of strategic IT initiatives, banks are deployed IT solutions to facilitate automation in transaction management, reporting and risk management. The following table portrays IT implementations statuses cutting across various banks.

Most of the banks irrespective of their nature of ownership have already started to implement core banking systems and general ledger automation systems. Initiatives such as Internet based transaction banking, self service kiosks, mobile banking are either underway or are planned in near future. The deployment of new technologies is gaining momentum, which has the potential to bring far reaching impact in the banking industry as a whole.

### E-Banking and Stock Market Operations

The Private Sector Banks in India are making most out of opportunities thrown up by the Internet leaving behind their slow moving Public Sector Banks. The technology driven banks such as HDFC Bank, ICICI Bank, Global Trust Bank, IDBI Bank are having the latest technology for fund transfers. The Internet and its underlying technologies will change the business and products of these banks. The ICICI Bank was the first bank to offer Internet banking in India. It has more than 10,000 regular Internet accounts of which more than 50% are those of NRIs. This bank has also started Internet Payment i.e. e-payment over the net. The UTI Bank also has similar facilities, in its branches. The Global Trust Bank has also started its Internet Banking Service including customer access to their depository accounts. Thus, e-banking culture is now spreading fast in the banking industry. In India, the future of Internet System is very bright. It has great potential and capability to change the nature and capacity of Stock Broking business. So far, its use in our country was limited as a medium of communication between a client and a broker. The client e-mails his order to the broker who punches orders at his terminal. This was subject to delay factor in the process and stages involved. With the coming of Internet online facility of trading cutting the time lag is

**Table 3.** Trend in Usage of e-banking in India during 2003-2010

Year	2003	2004	2005	2006	2007	2008	2009	2010
Change in %	9	12	15	20	25	32	40	50

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

**Table 4.** Awareness on Banking Services offered by Various Banks

Particulars	Core Banking	CRM	IAM	Business Intelligence	GRC	Self service Kiosk	Internet Banking	Mobile Banking	Financial Banking
Public Banks	H	L	L	L	M	L	H	M	H
Private Banks	H	H	H	M	H	H	H	H	H
MNC Banks	H	H	H	H	H	H	H	H	L

Source: The Economic Times Banking Technology Conclave, Banking on Technology India, September 3 2010, Mumbai, p. 11.

Note: H denotes High; M denotes Medium; L denotes Low

provided. The main benefits of Internet Trading System for brokers will be lower transaction costs, office costs-set-ups, wider client reach, hands off servicing and offering more services. Internet trading will change the system and the way markets work. The leakage of information of Institutional Traders which may lead to sharp volatility and fluctuations in the market too will be reduced. The Fund Manager will also be in a position to order his trade from his room instead of going to the office or table of the concerned broker. The volume of trade will also increase considerably. The Internet may also provide depth to the market. Therefore, it can be concluded that in a country like India, the Internet Trading will make the Stock Market most automated and also at the reach amongst large segment of the population.

### TOOLS AND SERVICES FOR E-BANKING

So far, there are two-tier structures in offering e-banking transactions for the end users. These include a basic tier of internet banking products that consist of customer account inquiry, funds transfer and electronic bill payment. A second tier includes basic services plus one or more

additional services like brokerage, cash management, credit applications

**Source:** African Regional Preparatory Conference for the WSIS, e-banking and Financial Services, credit and debit cards, customer correspondence, demat holdings, financial advice, foreign exchange trading, insurance, online trading, opening accounts, requests and intimations, tax services, e-shopping, standing instructions, asset management services, etc. These are explained in the following paragraphs in detailed.

### Home Banking

One type of electronic banking services is home banking which is done to access to account information and banking services through a personal computer using a modem and a phone line in addition, financial software or banking.

### Web Banking

Currently, many organizations invest to create their own websites to deliver marketing messages. The easiest form of Internet banking in order to display information about the

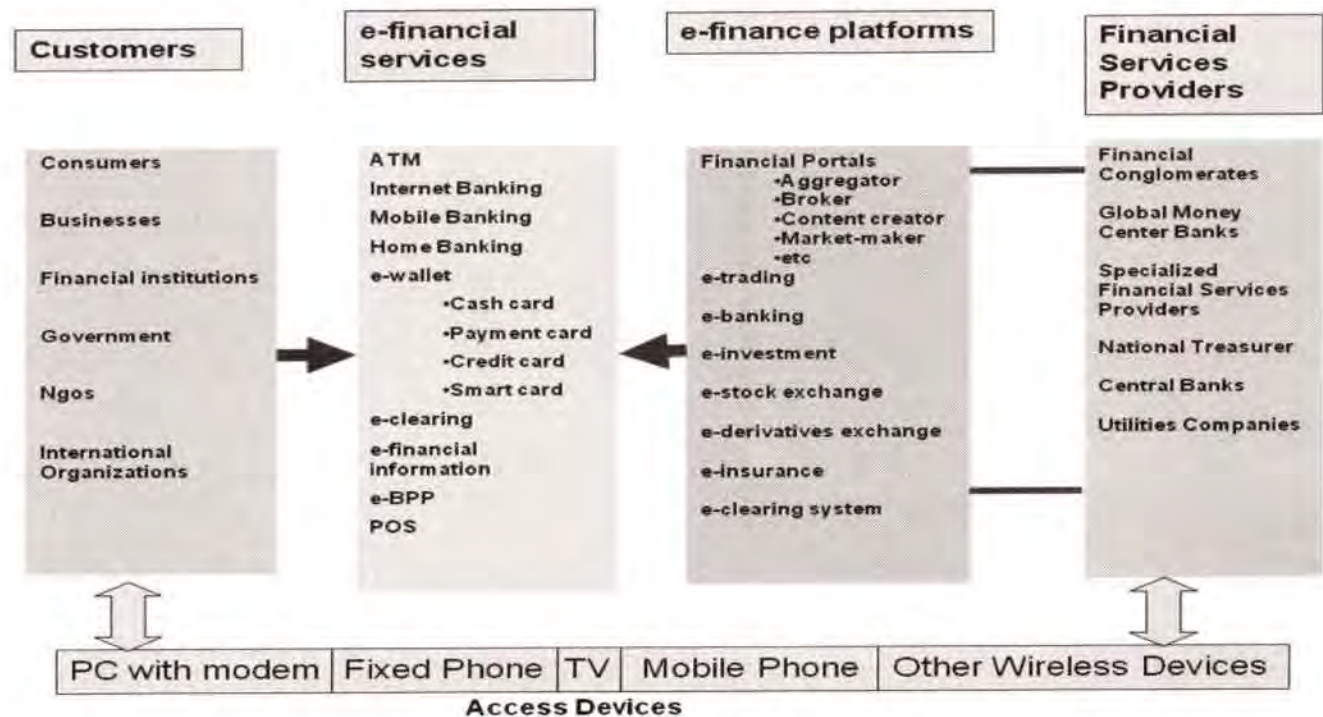


Fig. 1. E-Banking Landscape



products and services are via the network of World Wide Web. Today, all major banks and financial institutions have web pages. These pages allow customers and banks to interact and exchange information in order to provide best services. Also the web is used as a tool for examining and receiving suggestions from customers and the development of communications and expansion services like e-mail.

### Telephone Banking

One of the most common patterns of banking is telephone banking that it has long been used. There are generally three types of telephone banking systems. A type of it automatically through a computer system is responsive. The other type, the telephone banking is based on operator. In this case the customer is a person responsible for the responders and guidance. Another type of telephone banking is based on a Personal computer that used a PC for contact system. Means someone using your computer is connected to the banking system. Many services can be received through telephone banking such as bills, demand note requests, transfer funds between customer accounts in different banks, the second payment, received financial advice that typically are provided by human operators system. The availability of this phone can be very useful for everyone.

### Television Banking

In this method, using satellite TV customers deliver account information on its TV screen. The main point is that these services did not require the use of personal computers and this encourages the development of market systems. People like TV. This is an advantage for these services.

### Mobile Banking

Also, the concepts developed regarding electronic banking through mobile banking. This approach has, in fact, developed Internet banking and home banking. Mobile banking can be defined as a channel where customers can interact with the bank via a mobile device. In fact, the financial services sector of the wireless Internet to a digital input is possible and Internet banking has expanded the concept

to the mobile world. Mobile banking application is used in two ways: SMS and Internet. The result is fast delivery of new services increasing bank's efficiency.

### ATM

ATM machines are one of the first approaches of electronic banking that emerged in the early stages of the development of banking. The machines many make many banking services in day and night and customers using a personal identification number take on its financial transactions. Using cards and personal identification number, customers can receive and transfer money between accounts and pay or to obtain information about your account and billing application. Transactions conducted electronically as well, and are recorded immediately.

### FUTURE OF E-BANKING

As the saying goes, change is the only thing that is constant. And it is this change that would decide the future of banking sector, which has transformed from financial intermediately to risk inter-mediate. The emerging information technology facilitates in utilising knowledge management effectively and efficiently to improve both product range and service quality in the banking sector. It is predicted by the policy makers and expert committees on the subject that by 2020, the vast and enormous differences in the ambience between public sector banks and new generation private sector banks as well as foreign banks would be noticeably narrowed down. At the same time, the dominance of public sector banks, which accounts for nearly 80% share in banking sector, is likely to be reduced considerably by 2020. Technology has played a vital role in the progression of banking sector, through speed creation, accuracy, and efficiency of operations and reduction in the transaction cost. At present, banking services are now oriented to "anyhow, anywhere, anytime and any type" banking. The continued use of online banking by SMEs and individuals will lead to the next generation of online banking. Banks will endeavour to improve existing services as well as introduce new ones. Financial institutions are currently

developing Short Messaging Service (SMS), Wireless Application Protocol (WAP) and third generation (3G) mobile telephony applications. Some banks are also developing kiosks, which will allow online access. Analysts predict that banks will have to drive services via these new channels to attract customers, and not leave it to the technology.

### **Projected Indicators of Banks in India by 2020**

Without question, electronic money and banking has helped the world's economy grow and prosper. This digitization has contributed to advances like ATMs, credit cards and online banking. The transformation happening underneath is far more profound. Unprecedented computing power and advanced analytics turn oceans of ones and zeros into insights, in real time. Which means we could have a safer, more transparent and intelligent financial system for a smarter planet.

We see many of these changes happening in India today. By embracing Information Technology, banks in India are today serving customers better and making forays in the previously untapped markets—like rural areas. Risk reduction, real time application of data and transparency are some of the benefits that the industry is enjoying today. This enables the banks to provide services like Internet banking, mobile banking and ATM facilities to semi-urban and rural customers, expanding their reach to the most remote corners of the country. We see it helping multiple interconnected institutions. These changes are exciting, but more are needed. Because the benefits of smarter finance and banking are clear—for regulators, bankers, investors, companies and communities, rich and poor around the world, all of whose prosperity depends on a money system that is stable, secure and accessible to all.

### **Some Projections on E-Banking**

A lot of radical changes are speculated from the side of e-banking in near future. Due to advancement of science and technology human civilisation is going to experience new ways of living life. This is even not exceptional to banking sector. Some of the predictions are made in the following sentences.

### **Ubiquities Financial Services**

The great change on the face of financial services is all services will be available at free of cost. Credit is available from your utility company, insurance company, supermarkets and even employers. These credits will be transferable and they all compete and you can switch your loan among those that provides the lowest rates of interest.

### **Social Money**

Very shortly, actual money will no longer need to be tangible. Soon virtual currency/digital wallet will be embedded in your digital device which you can use from parking meters to shopping mall. Your iPhone will become your iWallet. If you need cash just walk up to gas station/convenient store and wave your iPhone to their system, you get your cash. We all hate ATM fees. Competition and free market pricing have created an explosion of new ATMs. Since the advent of access fees in 1996, the number of ATMs has nearly tripled, creating new terminals in more convenient locations. With Social Money, you can walk up to your friends and withdraw cash from him/her. By doing so he/she may make some money in the form of interest.

### **Quantitative Analytic Risks Management**

Technology will progress enough to provide instant calculation of risk/rewards of every monetary instruments. Customers can simply pick and choose products based on their risk profile. Quantitative analytics and smart infographics allow each customer to manage their risk as easy as picking what they want to eat for dinner. A customer can play with different scenarios where quantitative assessment is accurate to the last cent. System will prompt and alert you when they think you are taking more risks and trigger a review of your credit ratings. Every customer from the bank's perspective is an SI number and a risk rating.

### **CONCLUSION**

India's 400 million un-banked represent a tremendous opportunity for financial institutions and telecommunications companies.



Serving this market requires the management of high volumes of low value transactions which is precisely what robust e-banking systems are designed to do. With India's leadership in technology, one can only wonder why countries like Brazil with its correspondent banking system and the Philippines/South Africa with their m-banking solutions are so far ahead. It is evident that there is a huge gap between what our country reached so far and what is to be reached in the near future. The next decade will be a period of rapid change in the banking sector. Many fundamental changes are going to take place which will shape the future of economy as a whole. Technology always plays a dynamic role in this connection by creating new facilities and better ways to interact with customers and business models. Demographic shifts and the growth of small businesses will create tremendous opportunities for e-banking. By providing services that help customers manage their lives, financial institutions have an opportunity to build trust and develop more sustainable and profitable relationships with their customers.

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# Measuring Personality Traits: Need for a New Instrument

Bushara Bano\* and Parvaiz Talib\*\*

## Abstract

*Personality is a unique concept that emerges out of the interaction of the individual's psychophysical systems with the environment. Thus, personality is a dynamic organisation within the individual of those psychophysical systems that determine his characteristic behaviour and thought (Allport, 1968). A huge volume of research and books has been published on the issue which deals with measurement of personality traits. These measurements are based on certain assumptions. A holistic personality profile includes physical, emotional, mental, intellectual and spiritual sub-systems of the individual. All the psychometric tests across the globe are just touching the visible part of the iceberg. This paper provides the conceptual development of the personality theories. The paper also deals with the merits and the demerits of some well-known personality measurement tools. The paper proposes the need for a new instrument for measuring personality traits of individuals. It should be holistic in its approach so that all the sub-systems of individual's personality may be assessed.*

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**Keywords:** *Personality, traits, 16 PF, FFM, ZKPQ*

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## PERSONALITY: CONCEPT

The origin of the term personality is from Latin word "*persona*" which means mask. The actor in ancient Greece and Rome used to wear the mask to hide their identity on the stage while taking part in drama. This technique became popular in those days because of the role displayed by the actor on the stage. To describe one's personality it became important to emphasize both the person and the role played. Personality refers to the total behaviour of the individual, particularly to those relatively

enduring and consistent aspects that cause us to resemble others in some ways and to be totally different and unique in others. Personality is the integration of the individual's structure, modes of behaviour, interests, attitudes, capacities, abilities, and aptitudes. Personality may be the most adequate conceptualization of a person's behaviour in all its detail.

The term 'personality' has many definitions, but a common theme runs throughout most definitions, that is, personality refers to distinctive patterns of behaviour (including

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thoughts and emotions) that characterize each individual's adaptation to the situations of his or her life. The importance of personality in understanding behaviour has gained prominence in recent years. The personality is considered to be determined by heredity and environmental factors and it is moderated by situational factors. It means natural and nurture factors. Although the researchers have carried out a lot of work in measuring personality but nature and nurture debate is still working. A personality is also determined by influences acting upon the individual who is conceived and born, but it also significant to know the contribution of these personality changes on overall personality.

The childhood phase is influential in forming the personality of an individual. Besides, any major trauma at any stage of life can also influence the personality of an individual. It is assumed that an individual matures emotionally with age and experience. But beyond these sorts of generalisations, it is also important to identify about how and when personality actually changes. It can be concluded that it is merely not easy to define the timeline for personality changes. However, it is possible to identify general personality styles, aptitudes, sensitivities, traits etc. to define individuals.

### Types Approach vs. Trait Approach

Personality type theory aims to classify individual into certain category. It refers to psychological classification of different types of individuals. Personality types are synonyms with personality styles. Types refer to categories which are distinct or discontinuous, whereas Traits refer to categories which are continuous in nature. Types are based on the qualitative differences between people, whereas traits might be constructed as quantitative differences (Bernstein et al., 2008). According to type approach of personality, introverts and extroverts are two basic categories of individuals. On the other hand, according to trait approach of personality, introversion and extroversion are part of a continuous dimension, with many people in the middle.

The trait approach represents a paradigm shift away from the type approach of

personality. The shift began to take place in the 1920s and 1930s when the personality researches had been started in clinical settings and psychological laboratories (Carducci, 2009). The changing in the trend can be well understood by one of the statement of an eminent personality psychologist, Gordon Allport. He wrote: "The psychological problem (of personality) is strictly objective" and, he went on to say, "entirely consistent with the needs of laboratory procedures" (Allport, 1922).

The change has taken place because there are some shortcomings in type theory. The term "type" has not been used consistently in psychology. One of the major drawbacks of the type theory is that personality test scores usually fall on a bell curve rather than in distinct categories (Bess & Harvey, 2001). Some psychometric researches had compared "trait" approach and "type" approach and found that "trait" approach is more suitable in measuring the personality of the individual and other related psychometric dimensions. It was found that NEO-PI, a trait instrument was a better predictor of personality disorders in comparison to MBTI, a type instrument (Furnham & Crump, 2005). Because of these problems, researchers are now using trait approach in place of type approach of personality. It is also believed that it is near to impossible to explain the diversity of human personality with a small number of discrete types. Now the researchers recommend trait models of personality such as five factor model, NEO-PI model and NEO-FFM model (Asendorph, 2003; McCrae et al., 2006; Pittenger, 2004). It is described later that personality traits are subset of personality types. For the same purpose, this study has given special emphasis on the trait approach of personality.

### Personality Traits: The Context

Celebrated polymath Goethe had given a statement that "*Behaviour is a mirror in which everyone shows his image*". The statement captures an important element of personality, which is known as trait approach of personality (Ajzen, 2005). It is a common practice in personality discourse to describe people in terms of observed behaviour. It may be physical



characteristics, such as, 'She is tall, about 5'8"', 'He has blue eyes, and you have black hair'. The description may also be done on the basis of personality characteristics, such as, 'He's honest, independent and shy'. Labels such as outgoing, honest, shy, nervous, friendly and warm are relatively easy to discern and understand (Matthew *et al.*, 2003). In both the sentences, a series of adjectives are used to describe the individual. These adjectives which are used to describe the personality of the individuals are the traits. Traits are the dimensions of the personality that influence in a particular way a person's thoughts, feelings and behaviours (Costa & McCrae, 2006; Pervin, 2002). In addition to it, these traits are also assumed to be a contributing factor to the consistency in the expression of such thoughts, feelings, and behaviours across situations and over time (Fleeson, 2001; McAdams & Pals, 2006).

The first most well-known theory of personality was proposed by Sigmund Freud. The theory was based on the concept of sexual urges (Freud, 1912; Friedman & Shustack, 2003; Mroczek and Little, 2006). After Freud's theory, various theories of personality were proposed by the different personality psychologists, including Sullivan, Horney, Jung, Bandura, Murray, Allport and Cattell (Ehrenreich, 1997; Mroczek and Little, 2006). Besides these well-known theories, various views of personality also exist.

After examining the diverse classifications of personality theories, McAdams (1995) conceptualized personality as consisting of three levels, namely, dispositional traits, personal concerns, and life narratives (Taylor, 2004). Dispositional traits are broad and nonconditional constructs, which describe personality in terms of dispositions. Personal constructs are related with life-tasks, coping strategies, motivations and development constructs related to specific location and role. The third and the final level, the life narrative, includes the frameworks and constructs that give an identity to the individual (McAdams, 1995; Taylor, 2004). On the basis of classification done by McAdams, the trait approach is related to the first level of dispositional traits (Taylor, 2004). Traits refer to the observable behaviours in an individual that are often used to describe a person (Pervin and John, 2001).

## Personality Traits: Basic Assumptions

Although there are various trait viewpoints, they all tend to be guided by certain basic assumptions (Wiggins, 1997). There are three basic beliefs associated with characteristics features of traits, namely, consistency, uniqueness and degree of likableness.

First, principal assumption of the trait viewpoint is that behaviour is influenced across a variety of situations in a manner consistent with the traits possessed by the individual (Fleeson, 2001; Johnson, 1997). Consistency means a person can be expected to behave in approximately the same way in similar situations. Consistency like Uniqueness is relative in nature. A person may be self-confident in a situation because he has mastered the skills needed to adjust to it and has experienced success in similar situations. But in situations requiring skills and modes of adjustment which he has not mastered so well or has had less success within the past, he will show less confidence and may even show fear.

Second, principal assumption of the trait approach is individual differences or expression of Uniqueness. It is assumed that individual differs in the degree to which they possess certain traits (Costa and McCrae, 2006; Pervin, 2002). Uniqueness does not mean that a person has certain traits that are peculiarly his. It means that he has his own individual quantity of a particular kind of behaviour. It was defined that Traits are dimensions of behaviour in which individual differ (Woodworth & Marquis, 1947).

Third, principal assumption of the trait theory is likableness. Some traits, such as, honesty, generosity, trustworthiness, are liked by others, while some traits, such as, rudeness, cruelty, egocentrism are disliked by others. These attribute towards traits result from social learning in a particular cultural setting and are most universal within a culture (Hurlock, 1976).

## Trait Approach: Different Perspectives

Major theories of trait approach of personality were given by Gordon W. Allport, Raymond B. Cattell, and Hans J. Eysenck.

**Gordon Allport: Personalistic Viewpoint**

Allport’s theory of personality is personalistic in nature (Carducci, 2009). Personalism is the psychology of the person. According to Allport, “Personality is the dynamic organisation within the individual of those psychophysical systems that determine his characteristic behaviour and thought”. The definition reflects Allport’s belief in internal structures (traits) and neuropsychic

structures (personal dispositions), which together developed human behaviour. The belief provoked Allport to argue that traits are the core concept of personality, and as they are core, they exist in the nervous system of the individual.

**Classifications of traits: On the basis of Uniqueness of the Individual**

Whereas personal dispositions were used to

**Table 1.** Traits of the 16 PF: a Listing and Description of the Basic Source Traits

Letter	Cattell’s Label for the factor	Descriptions of High Score	Description of Low Score
A	Warmth	Warmhearted Outgoing Easygoing	Reserved Detached Critical
B	Reasoning	Bright High mental capacity Fast-learning	Dull Low mental capacity Poor judgment
C	Emotional Stability	Emotional stable Mature Faces reality	Affected by feelings Easily upset Changeable
D	Dominance	Assertive Aggressive Competitive	Obedient Easily led Dependent
E	Liveliness	Enthusiastic Happy-go-lucky Talkative	Serious Full of cares Concerned
F	Rule Consciousness	Conscientious Persistent Responsible	Disregards value Expedient Undependable
G	Social Boldness	Adventurous Bold Impulsive	Shy Restrained Withdrawn
H	Sensitivity	Sensitive Overprotected Expect affection and attention	Unsentimental Self-reliant Keeps to the point
I	Vigilance	Jealous Dogmatic Suspicious	Trusting Understanding Ready to forget difficulties
J	Abstractedness	Imaginative Absent-minded Intrested in art, theory, basic beliefs	Practical Conventional Concerned with immediate interests



Letter	Cattell's Label for the factor	Descriptions of High Score	Description of Low Score
K	Privateness	Worldly Socially aware Exact, calculating mind	Unpretentious Spontaneous Lacks self-insight
L	Apprehension	Apprehensive Insecure Troubled	Self-assured Self-confident Cheerful
Q1	Openness to change	Experimenting Analytical Free-thinking	Not likely to change Respects traditional values Tolerant of old methods
Q2	Self-Reliance	Self-sufficient Resourceful Prefers own decisions	Group dependent Is a "joiner" Sound follower
Q3	Perfectionism	Controlled Exacting willpower Compulsive	Uncontrolled Follows own urges Careless of social rules
Q4	Tension	Tense Frustrated Driven	Relaxed Tranquil Composed

distinguish the unique variation among individuals, Allport explained the variation in a different way. Allport used the term cardinal, central, and secondary traits to describe the variations (Cohler, 1993).

**Cardinal traits** were argued to be pervasive and all encompassing. These traits represent the most significant and dominant features of individual personality, expressing themselves virtually all aspects of behaviour (Carducci, 2009). These traits are not possessed by all the individuals.

Allport defined **Central traits** as "outstanding characteristics of the individual. The personality of most individuals is described by a set of central traits (Carducci, 2009). These traits are less pervasive and dominant than cardinal traits, but it still have highly characteristic of individual personality. Central traits express the situation specific aspect of personality (Pervin & John, 2001).

Secondary Traits are the personal dispositions having a much more limited influence on the individual's behaviour (Carducci, 2009). It refers to the individual, specific, and consistent aspects of personality (Pervin & John, 2001).

Allport's penchant for language was instrumental in development of his approach to personality (Friedman & Schustack, 2003). After developing a list of 17,953 adjectives, Allport and Odbert categorized these adjectives into four parallel columns. The first column included the real traits of personality. The second column contained those traits which showed present activity, temporary states of mind, and mood. The third column was aimed to contain evaluations of character. The fourth column consisted of terms that did not fit into the previous three columns. These final traits were again divided to include physical qualities, explanations of behaviour, and explanations of capacities and talents.

Allport's viewpoint has two major strengths (Carducci, 2009). The first strength is the extent of versatility in the research methodologies employed in his research. He used various investigate methods including questionnaires, surveys, case studies, content analysis, experimental methodologies and the analysis of personal documents (Carducci, 2009).

The second strength of Allport's viewpoint

was an emphasis on the “person” in the personality. Allport’s philosophy of personality reflected the belief that each person in his or her own right, functioning at a conscious level of awareness, is the most legitimate object of study in the personality psychology (Carducci, 2009). Allport’s viewpoint has three major limitations. The first limitation is the invisibility of traits. The second weakness was his failure to link the present with the past (Carducci, 2009). The third limitation of Allport’s viewpoint is too much emphasis on the individual. He tried to establish more general laws of behaviour by studying groups of people which is more a “unscientific” approach to the study of personality (Carducci, 2009). In addition to it, his classification of personality disposition in four columns was not very clear as these words were synonyms.

### **Raymond B. Cattell: Structural Trait Viewpoint**

Cattell defined personality as “that which permits a prediction of what a person will do in a given situation”. A trait may be defined as that which defines a person will do when faced with a defined situation (Cattell, 1979). After a series of Cluster analysis on the list of adjectives identified by Allport and Obdust, Cattell developed a 16 personality factors questionnaire (16 PF). The 16 PF (Cattell, 1993; Cattell *et al.*, 1970) is a multidimensional personality inventory containing 185 questions designed to assess 16 different source traits (Carducci, 2009), which are discussed later in this chapter. The 16 traits are assigned letters in order of their contribution to the total personality structure (Table 1).

### **Classification of Traits: On the basis of Uniqueness of the individual**

According to Cattell, uniqueness of personality of each individual is due to two categories of traits, namely, surface traits and source traits (McAdams, 1997; Wiggins, 2003). The **Surface traits** refer to those behaviours that, when empirically measured and inter-correlated, tend to cluster together (Carducci, 2009). These traits appear to be related, but fail to function as a unitary whole (Morgan, 2008). These traits are the most visible evidence of a trait (Carducci, 2009). As such, no common

underlying causes to these traits are found (Morgan, 2008). The surface traits are controlled by underlying source traits. The **Source traits** form a unitary dimension and are the fundamental aspects of personality (Morgan, 2008). These traits are responsible for the individual difference among the personality of the different individuals (Carducci, 2009). In defining and studying the personality, Cattell used three primary sources of empirical data: L-data, Q-data, and T-data (Wiggins, 2003). L-data consists of life-records of the person, Q-data includes self-ratings on the questionnaires or personality tests and T-data involve observations of an individual in controlled situations designed to assess some aspects of personality (Pervin & John, 2001; Friedman & Schustack, 2003).

The basic concept of Cattell’s viewpoint are designed to achieve what he felt was the basic goal of personality psychology. The goal of the Cattell’s approach was to predict what an individual will do in specific situation (Carducci, 2009). Cattell’s structural trait viewpoint has two major strengths. The first strength was that it was a quantitative approach to study the personality. The second strength was the theory which was basically scientific in nature. This was also the major limitations of the theory.

The theory was too much technical in nature and that was not reader friendly, while filling up the questionnaire. Secondly, Cattell has been criticized for his attempt to define a universal set of source traits that seem to lose sight of the individual (Carducci, 2009).

### **Hans J. Eysenck: Hierarchical Trait Viewpoint**

Eysenck argued that “experiment without theory is blind; theory without explanation is lame”. Eysenck began with the fundamental idea that personality has two major dimensions (Brand, 1997). The two major dimensions of the personality were described as *Introversion-Extroversion* and *Stability-Instability*, which Eysenck termed as super traits. A further supertrait identified by Eysenck (1982) is *psychoticism*. People scoring high on psychoticism are described as: ‘egocentric, aggressive, impersonal, cold, lacking in empathy, impulsive,



lacking in concern for others and generally unconcerned about the rights and welfare of other people' (Eysenck, 1994).

### The Hierarchical Nature of Traits

According to Eysenck traits are hierarchical in nature, started from specific actions to general types. Eysenck's view on the basic structure of personality can be illustrated from the Fig 1. Eysenck argued for four hierarchy levels of traits, namely, *specific response level*, *habitual response level*, *trait level* and *type level*.

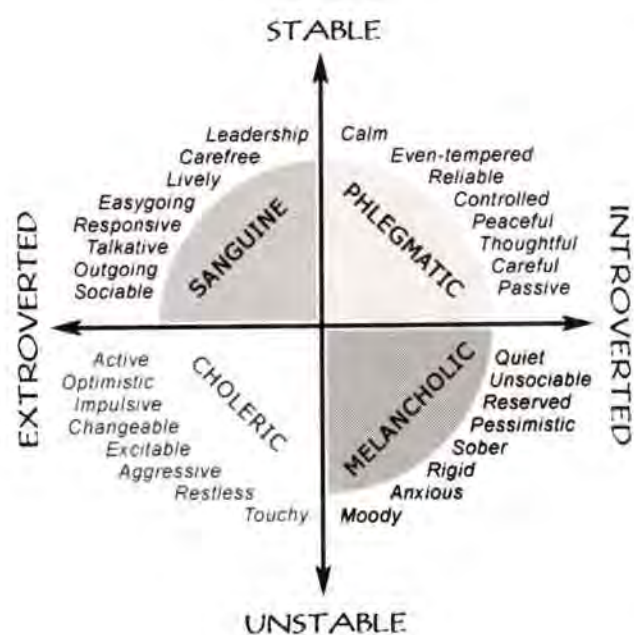


Fig. 1

*Specific responses* are observed in a particular situation. *Habitual response* is the repetition of the specific response across a number of situations. Traits are a collection of habitual responses. At the top level, personality types exist. A type is the interrelationship of many traits to create a general pattern of behaviour. This behaviour exerts a major influence on the individual's response style (Carducci, 2009).

### Three Basic Personality Dimensions

Eysenck proposed three basic types of personality traits, namely, extraversion-introversion (E), neuroticism (N), and psychoticism (P). These

dimensions can be assessed using the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975, 1994). *Extraversion-Introversion* comprises extraversion at one end of the continuum and introversion at the other end of the continuum (Eysenck & Eysenck, 1975, 1994). Extroverted people like to be around other people, optimistic, Gregarious, outgoing, sociable and adventurous. On the other hand, introverts like order. They are introspective in nature. Introverts are emotionally controlled, calculating, and socially distant outside of having only few close friends (Carducci, 2009). *Neuroticism* dimension comprises emotional stability at one end of the continuum and emotional instability on the other end of the continuum (Eysenck & Eysenck, 1985). Neuroticism refers to an individual's tendency to become upset or emotional. Emotionally stable people (low in neuroticism score) are carefree, even-tempered and calm in nature while emotionally unstable people (high in neuroticism score) are touchy, restless, moody and anxious in nature (Carducci, 2009). These emotionally unstable peoples are more sensitive to aromas and display greater reactions to stress. *Psychoticism* dimension comprises psychoticism at one end of the continuum and superego control at the other end of the continuum (Eysenck, 1990; Eysenck & Eysenck, 1976). The superego is the sense of morality. Psychoticism is associated with the tendency to be impulsive, cold, not empathic, unconcerned about the rights and welfare of others, and anti-social. Individuals low in psychoticism score are described as warm, sensitive and concerned about others (Carducci, 2009).

There were two major strengths of Eysenck's viewpoint. First, Eysenck had emphasis on the scientific perspective of personality psychology. Second was his conceptual approach to personality psychology. His personality perspective combined the study of genetics, biological, and physiological processes, learning theory, and social and cultural factors (Carducci, 2009).

Again, Eysenck, too was criticized due to some shortcomings in his personality theory. It was analysed that Eysenck's notion of three dimensions in personality is unable to capture individual differences in personality (Pervin & John, 2001). Eysenck was also criticized to

disregard results that were contrary to his own findings and simultaneously over estimating findings in according with his nomenclature (Pervin & John, 2001). Later, the limitations gave the emergence of Five Factor model of personality traits.

**Five Factor Model: Contemporary Approach to classify Traits**

Goldberg (1981) used the term “Big 5” to the five factor model of personality. The Five Factor model (FFM) is a descriptive model used in analyzing and classifying the terms used by people to describe themselves and others (Costa & McCrae, 2006; John & Srivastava, 1999). McCrae and Costa described the model as “comprehensive taxonomy of personality traits” (1991, p. 367).

**The Five Factors**

McCrae and Costa (2006) labelled the five factors as *Neuroticism*, *Extroversion*, *Openness to Experience*, *Agreeableness* and *Conscientiousness* (Figure). The trait of *Neuroticism* is associated with anxiety and negative affectivity (Carducci, 2009). It is a tendency of an individual to experience distress (McCrae & John, 1992). The factor of Neuroticism has much consensus among the researchers of personality. The trait of *Extroversion* has fewer consensuses than trait of Neuroticism (McCrae & John, 1992). The trait is associated with sociability and the expression of

positive effects. It is the trait that is relatively stable in terms of the role it plays across the life course (Carducci, 2009). *Openness to experience* is rather a disputative trait among personality psychologists in terms of conceptualization (Matthew *et al.*, 2003; McCrae & John, 1992). In general term, the trait is associated with seeking novelty, freshness and change (Carducci, 2009). The trait *Agreeableness* reflects individual differences in concern for cooperation and social harmony (Graziano & Eisenberg, 1997). People who score high on this trait are empathetic, considerate, friendly, generous, and helpful in nature. They also have an optimistic view of human nature. They tend to believe that most people are honest, decent, and trustworthy. On the other end of the dimension, there are negative characteristics such as indifference, callousness, hostility and spitefulness (Haslam, 2007). Individuals who score high on this trait of *conscientiousness* are described as thorough, organized, achievement-oriented, efficient, diligent, hard working, compulsive and goal striving (Haslam, 2007; McCrae and Costa, 1987). If it is taken to extreme, the individual may be defined as perfectionist. Individuals scoring low on the trait tend to be impulsive, negligent, careless and disorganized.

The NEO Personality Inventory (NEO-PI; Costa and McCrae, 1985, 1992) is one of the most widely used personality test designed to quantify the five major dimensions of personality (Carducci, 2009).

**Table 2.** The Big Five: Factor Labels and Characteristics Traits

Factor Label	Characteristic Traits
E-factor: Extroversion	Adventurous, assertive, dominant, shy, sociable, quiet*, reserved*, retiring*
A-factor: Agreeableness	Cooperative, generous, sympathetic, cruel*, quarrelsome*, unfriendly*
C-factor: Conscientiousness	Deliberate, efficient, precise, careless*, frivolous*, irresponsible*
N-factor: Neuroticism temperamental*	Calm, contented, stable, anxious*, self-pitying*
O-factor: Openness interests*,	Artistic, insightful, intelligent, commonplace*, narrow shallow*

Note: \*These traits are negatively related to the factor. Source: John (1990)



The five factor model is better among all the viewpoints discussed up to here. The model allows the systematic approach to personality. Various researches done by McCrae and Costa (2006) found that the model is valid across different cultures and languages. One limitation of the model shows that although it describes a basic unit structure, it does not explain why the structure exists. The model does also not focus on increasing the understanding of the individual (Carducci, 2009).

### Zuckerman Kuhlman Model of Personality

The Zuckerman and Kuhlman proposed an alternative Five Personality Model (Zuckerman *et al.*, 1993). The model was developed by comparing 46 commonly used scales based on three, four, five and six dimensions of personality questionnaires (Zuckerman *et al.*, 1988, 1991). Zuckerman (1993) concluded that both the three factor model of Eysenck and five factor model of McCrae and Costa were robust and reliable. Based on these understandings and further statistical analysis of the data, a new questionnaire was developed in the personality psychology, was known as Zuckerman Kuhlman Personality Questionnaire (ZKPQ scale). The items of ZKPQ scales were aimed to define the five factors more clearly. The scale also excluded the items showing a strong social desirability influence (Aluja *et al.*, 2006).

### The Alternative Five Factors

The model consists of five personality traits: *Impulsive Sensation Seeking*, *Agression-Hostility*, *Activity*, *Sociability*, and *Neuroticism-Anxiety*. Further, Aluja, Rossier, Garcia, Algleitner, Kuhlman and Zuckerman (2002), proposed cross-cultural shortened form of the Zuckerman Kuhlman personality Questionnaire (ZKPQ-50-CC).

*Impulsive Sensation Seeking* items describe a lack of planning and tendency to act impulsively without thinking. The sensation seeking items describe the general need for thrills and excitement, a preference for unpredictable situations and friends and the change for need and novelty. Unlike earlier

sensation seeking scales, there is no mention of specific activities like drinking, drug use, sex or risky sports. These items of *Agression-Hostility* describe a readiness to express verbal aggression, rude, thoughtless, or anti-social behaviour, revengefulness and spitefulness. These peoples with *Neuroticism-Anxiety* have a quick temper and impatient with others. These persons describe emotional upset, tension, worry, fearfulness, obsessive indecision, lack of self-confidence, and sensitivity to criticism. The *Activity* factor encompasses two groups of persons. One describes the need for general activity and impatience and restlessness when there is nothing to do. The second group indicates a preference for challenging and hard work and a lot of energy for work and other tasks. The *Sociability* factor reveals one group of items indicating a linking of big parties and interacting at parties and having many friends. The second group indicates intolerance for social isolation in extroverts and a linking for solitary activities in introverts. A frequent objection to the alternative five factors is that five dimensions cannot possibly capture all of the variations in human personality (McAdams, 1992), and that they are too much broad.

### CONCLUSION

There are many theories and models to measure personality traits but no model appears to describe the important traits of personality of any individual. Most of the personality tests do not talk about spiritual personality of the individual. On the other hand, researches have shown that spirituality has a major impact on a person's behaviour. There is a need to explore the area of personality taxonomy further to develop a systematic framework for distinguishing, ordering, and naming the behavioural, emotional, and experiential characteristics of individuals. There is a need of a holistic model which could measure personality on all five levels, namely, physical, emotional, mental, intellectual and spiritual.

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# A Study on Mobile Phone Usage Pattern of College Students in Sivakasi, Tamil Nadu

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## Abstract

*Nowadays, a mobile phone is no more a luxury; it is one of the most essential articles of a man's life. With the growth in technology, mobile phones are becoming an extension of an individual with more storage space, more functions and more usages. The main objective of the research is to know the mobile phone usage pattern of college students in Sivakasi. Usage of mobile phone has increased among the students in the recent times. Rapid growth and competition among the handset companies and mobile services provider companies have decreased the rates for mobile handsets as well as mobile services. This has resulted in the increase in customer base. Hence the researcher has selected this topic for his research.*

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**Keywords:** Mobile Phone, College Students, Handsets

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## INTRODUCTION

Mobile phones have become an essential part of human life. Teenagers are the majority of mobile phone users in the world. An empirical study about uses and misuses of the mobile phone has highlighted that teenagers are the most affected among mobile phone users. The consumption patterns of mobile phone among teenagers are erratic and alarming. The youngsters between the age group 15-22 are much crazy than the people of other age segments.

No doubt mobile phone is a need of the day but various evils and diseases catch teenagers at their early age. The students in colleges and schools are extensively using mobile phones instead concentrating in classes. Due to over usage of mobiles, the students are not able to

concentrate in their studies. Being at an impressionable age, the students' minds get distracted that lead them away from their studies. The various applications of mobile phones like messaging, whatsapp, making video film, MMS, chatting, etc. is the practice of teenagers.

Usage of mobile phone has increased among the students in the recent times. Repaid growth and competition among the handset companies and mobile services provider companies have decreased the rates for mobile handsets as well as mobile services. This has resulted in the increase of customer base.

Nowadays we can find a mobile phone with every student. Thus it is of significant interest to assess the students' view on usage, necessity and spending on mobile phones.

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However, to the best of our knowledge, there has not been any survey that exclusively compares the students' perspective on the different mobile service providers.

The survey also investigates general opinion from the respondents about the awareness of medical side effects of mobile phone usage.

The youth today is extremely technology-savvy; a segment of society that has been active in transforming the application and use of digital technologies in unprecedented ways. The market segment defined here comprises of young adults between the ages 20 to 25 who are more comfortable with using the mobile phones than any previous generation.

### **Statement of the problem**

Nowadays we can find a mobile phone with every student. Students are using mobiles for communication, to access social websites like twitter, facebook, etc. Kids as young as 10 years are being gifted mobile phones. Parents give their children mobile phones to protect them from every day risks involving personal security and safety. Today more than one out of six people worldwide are mobile-phone subscribers. Students have the facility of easy communication with the world beyond the classroom and an endless opportunity to engage with nearly endless entertainments and distractions. Hence, this present study aims to know the mobile phone usage pattern of college students in the study area.

### **Objectives of study**

This study has the following objectives: to study the history and growth of mobile phone; to analyse mobile phone usage pattern of college students; to offer suitable suggestion.

### **Scope of the study**

Mobile phones are now an indispensable tool for communication exchange among young people. This study seeks to obtain more information on mobile phone usage patterns of college students. This study is the first step in understanding design issues of the mobile phone ownership and mobile phone usage patterns among college

students in Sivakasi. As the phones get cheaper and more sophisticated, sales of mobile phones to teenagers become more common. However, as the mobile phones become more compact, concerns about problem use keep growing. Information obtained from the present study will provide a baseline understanding on the mobile phone behaviour of college students in Sivakasi. The present study will reveal information on the patterns and levels of usage on mobile phones college students as well as their related factors.

## **METHODOLOGY**

The study was conducted using in-person delivery techniques. The study is based on both primary and secondary data. Having such a supervised survey technique ensures that each respondent understands every question and answers them correctly, too.

### **Primary data**

The primary data collected from the respondents through a well-designed interview schedule.

### **Secondary data**

The secondary data collected from various journals, magazines, newspapers, books and websites in connection with the study.

### **Sampling design**

Having considered the indefinite universe and the time at the disposal of the researcher, it is decided to adopt the convenient sampling technique. At least 125 students from 8 colleges in Sivakasi are selected on the basis of total strength of these colleges. The following table will clearly explain the sample design.

### **Plan of analysis**

The data analysed and interrupted with the help of statistical tools such as %age, Chi-square test.

### **Hypothesis**

Hypothesis is a tentative proportion formulated for empirical testing. It is a declarative statement



combining concepts. In order to achieve the objectives of the present study the researcher has formulated the following hypotheses.

There is no significant relationship between gender and opinion about mobile phone and its service providers.

There is no significant relationship between family income and opinion about mobile phone and its service providers.

### Demographic Classification

Demographic classification is based upon the characteristics such as sex, marital status and income level. The details are presented in Table 2.

The Table 2 reveals that out of 125 respondents, most of the respondents are male, unmarried, earn ₹5,000 to ₹10,000 and having two cell phones.

### Brand name of mobile phone

The researcher has also collected the details of mobile phone brand, which is mostly preferred by the respondents. The results are presented in Table 3.

The above table shows that 73 respondents (58.4%) prefer Nokia 27 respondents (21.6%) prefer Samsung and 9, 8 and 1 respondents prefer LG, Sonya and Motorola respectively and remaining respondents prefer others. It is inferred that a majority of the respondents are using Nokia. The Table 3 shows the brand preference of mobile phone.

### COST-WISE CLASSIFICATION

The researcher has also gathered the information about the cost of mobile phone used by the respondents. The results are shown in the Table 4.

**Table 2.** Gender-wise classification

Gender	No. of Respondents	% to total
<b>Gender-Wise Classification</b>		
Male	67	53.6
Female	58	46.4
<b>Marital Status</b>		
Married	11	8.8
Unmarried	114	91.2
<b>Income Level of the Family</b>		
Upto ₹5000	53	42.4
₹5000-10000	42	33.6
₹10000-15000	12	9.6
₹15000 & above	18	14.4
<b>Number of Mobile Phone owned by Respondents</b>		
One	24	19.2
Two	48	38.4
Three	34	27.2
More than three	19	15.2
Total	125	100

Source: Primary data

**Table 1.** Sampling design

Name of College	Strength of Students	Sample
Ayya Nadar Janaki Ammal College of Arts and Science	3800	28
Mepco Schlenk Engineering College	3000	22
Arasan Ganesan Polytechnic	1100	8
P.S.R. Engineering College	1900	14
Ayya Nadar Janaki Ammal Polytechnic College	900	7
Standard Fireworks Rajaratnam College For Women	3000	22
Sri Kaliswari College of Arts and Science	2900	17
Sivakasi Institute of Printing Technology	900	7
Total	17000	125

The Table 4 clearly exhibits that 70 respondents (56%) say that the cost of mobile phone is between ₹1500 and ₹3000, 26 respondents (20.8%) say that the cost of mobile phone is ₹3000 and ₹4500, 17 respondents (13.6%) say that the cost of mobile phone is ₹4500 and ₹6000 and 12 respondents (9.6%) say that the cost of mobile phone is above ₹6000. It is inferred that majority of the respondents' mobile phone cost is ₹1500-3000.

#### Purchase-wise classification

The researcher has also gathered the information about how the respondent purchases the mobile phone. The results are presented in the Table 5.

It is apparent from the above table that out of 125 respondents, 117 respondents (93.6%) purchase mobile phone by cash and 8 respondents (6.4%) are purchase mobile phone by installment system. It is inferred that a majority of the respondents purchase mobile phone by cash.

**Table 3.** Brand name of mobile phone

Brand Name	No. of Respondents	% to total
Nokia	73	58.4
Sony	8	6.4
LG	9	7.2
Samsung	27	21.6
Motorola	1	0.8
Others	7	5.6
Total	125	100

Source: Primary data

**Table 4.** Cost-wise classification

Cost	No. of Respondents	% to total
₹1500-3000	70	56
₹3000-4500	26	20.8
₹4500-6000	17	13.6
₹6000 & Above	12	9.6
Total	125	100

Source: Primary data

**Table 5.** Purchase-wise classification

Purchase category	No. of Respondents	% to total
Installment system	8	6.4
By Cash	117	93.6
Total	125	100

Source: Primary data

#### Number of years of using mobile phone

The researcher has also gathered the information about how long the respondents are using mobile phone in the study area. The results are presented in the Table 6.

It is apparent from the Table 6 that 60 respondents (48%) are using mobile phone less than 2 years and 51 respondents (40.8%) are using mobile phone from 3-5 years and 9 respondents are using mobile phone from 6-8 years and 5 respondents are using mobile phone more than 8 years. It is inferred that majority of the respondents are using mobile phone less than 2 years.

**Table 6.** Number of years of using mobile phone

Purchase category	No. of Respondents	% to total
Less than 2 years	60	48
3 - 5 years	51	40.8
6 - 8 years	9	7.2
Above 8 years	5	4
Total	125	100

Source: Primary data

#### Factors influencing the purchase

There are so many factors influencing the people to purchase their mobile phone. In order to know the factors, which are motivating the respondents to purchase the mobile phone, a study has been made and the results are presented in the Table 7.

It is vivid from the above table that 46 respondents (36.8%) are motivated by friends,



43 respondents (34.4%) are motivated by family members, 28 respondents (22.4%) are motivated by advertisement and 8 respondents (6.4%) are motivated by shopkeepers. It is inferred that most of respondents are motivated by friends to purchase a mobile phone.

**Table 7.** Factors influencing the purchase

Factors	No. of Respondents	% to total
Advertisement	28	22.4
Friends	46	36.8
Family members	43	34.4
Shopkeepers	8	6.4
Total	125	100

Source: Primary data

### Opinion about price of mobile phone

The following table shows that the opinion about the respondents in connection with the cost of the mobile phone.

It is observed that out of 125 respondents, 55 respondents (44%) feel that the price is reasonable and 39 respondents (31.2%) feel that the price is expensive and 31 respondents (24.8%) feel that the price is cheap. It is inferred that majority of the respondents opine that the price is reasonable.

### Nature of calls attended

The following table shows that the nature of calls mostly attended by the respondents.

It is observed that out of 125 respondents, 37 respondents attend only incoming calls and

**Table 8.** Opinion about cost of mobile phone

Opinion	No. of Respondents	% to total
Cheap	31	24.8
Expensive	39	31.2
Reasonable	55	44.0
Total	125	100

Source: Primary data

17 respondents (13.6%) are using mobile phone for outgoing calls and 71 respondents (56.8%) are using mobile phone for both incoming and outgoing calls. It is inferred that majority of the respondents are using mobile phone for both outgoing and incoming calls.

### Number of calls received per day

The following table shows that the respondent daily received calls.

It is clearly understood from the above table that out of 125 respondents, 81 respondents (64.8%) receive less than 10 calls, 25 respondents (20%) receive 11–20 calls and 15, 3 and 1 respondents receive 21–30 calls, 31–40 calls and above 40 calls respectively. It is inferred that majority of respondents (64.8%) receive less than 10 calls per day.

### Daily dialled calls

The Table 11 shows the dialed calls details of respondents.

It is observed that out of 125 respondents, 78 respondents (62.4%) dialled less than 10 calls

**Table 9.** Nature of calls attended

Nature of call	No. of Respondents	% to total
Incoming	37	29.6
Outgoing	17	13.6
Both	71	56.8
Total	125	100

Source: Primary data

**Table 10.** Number of received calls per day

Nature of call	No. of Respondents	% to total
Less than 10 calls	81	64.8
11–20 calls	25	20.0
21–30 calls	15	12.0
31–40 calls	3	2.4
Above 40 calls	1	0.8
Total	125	100

Source: Primary data

per day, 29 respondents (23.2%) dialled 11–20 calls, 16 respondents (12.8%) dialled 21–30 calls and only 2 respondents dialled 31–40 calls per day. It is inferred that most of the respondents dialled less than 10 calls per day.

**Table 11.** Daily dialled calls

No. of calls	No. of Respondents	% to total
Less than 10 calls	78	62.4
11–20 calls	29	23.2
21–30 calls	16	12.8
31–40 calls	2	1.6
Total	125	100

Source: Primary data

### Facilities available in mobile phone

The following table shows the details of the knowledge about facilities available in the mobile phone.

It is lucid from the above table that out of 125 respondents, 108 respondents (86.4%) are having knowledge about the facilities available in the mobile phone and remaining 17 respondents (13.6%) do not know about the facilities available in the mobile phone. It is inferred that majority of respondents have knowledge about the facilities available in the mobile phone.

### Known facilities in mobile phone

The following table shows the facilities available in the mobile phone.

It is understood from the Table 13 that out of 108 respondents, 25 respondents (23.15%) know net connection in their mobile phone, 19 respondents (17.59) know music option, 17 respondents (15.74%) know games facilities, 16 respondents (14.81%) know camera facilities in their mobile phone and remaining respondents come under other category.

### Number of sim cards used in mobile phone

The researcher has also analysed the information about the number of SIM card facilities available

in mobile phone. The Table shows that the number of SIM card facilities available in mobile phone.

The Table 14 reveals that out of 125 respondents, 64 respondents (51.2%) are having dual SIM card facilities in their mobile phone and 61 respondents (48.8%) are not having such type of facilities.

**Table 12.** Facilities available in mobile phone

Facilities available	No. of Respondents	% to total
Known	108	86.4
Unknown	17	13.6
Total	125	100

Source: Primary data

**Table 13.** Known facilities in mobile phone

Facilities	No. of Respondents	% to total
Games	17	15.74
Waiting option	5	4.63
Music option	19	17.59
Cricket score	7	6.48
News	6	5.56
Camera	16	14.81
Net connection	25	23.15
Storage facility	3	2.78
Film clips	4	3.70
Ringtone downloads	5	4.63
Others	1	0.93
Total	108	100

Source: Primary data

**Table 14.** Number of SIM card used in mobile phone

No. of SIM card	No. of Respondents	% to total
One SIM card	61	48.8
Two SIM card	64	51.2
Total	125	100

Source: Primary data



### Mobile phone changes

Nowadays most of people change their mobile phones frequently. The following table shows the mobile phone changing behaviour of respondents.

It is apparent from the Table 15 out of 125 respondents, 71 respondents (56.8%) are retaining their mobile phones and 54 respondents changed their mobile phone frequently. It is inferred that a majority of respondents retain their mobile for a long period.

### Reasons for mobile phone changes

The researcher has also analysed the reasons for changing mobile phones in the following table.

It is observed that out of 54 respondents, 25 respondents (46.30%) changed their mobile phone as a hobby and 21 respondents (38.8%) changed their mobile phone due to technical fault and 8 respondents (14.82%) changed their mobile phone due to prestige/status. It is inferred that a majority of respondents changed their mobile phone as a hobby.

### Preferred service providers

The Table 17 shows the brand preferred service providers of the respondents.

From Table 17 it is known that 49 respondents, out of 125 respondents, are the customer of Vodafone, 24 respondents are using Airtel, 16 respondents are using Aircel, 12, 10, 9 and 5 respondents are using Reliance, BSNL, Tata Docomo and Idea respectively. It inferred that most of the respondents are using Vodafone SIM.

### Different mode of contact

Nowadays people use many modes to contact other. The following table shows that the different mode of contact of respondents.

It is vivid from the above table that 52 respondents (41.6%) contact others by calling, 49 respondents (39.2%) contact through message and 24 respondents (19.2%) contact through missed calls.

**Table 15.** Mobile phone changes

Particulars	No. of Respondents	% to total
Changed	54	43.2
Not changed	71	56.8
Total	125	100

Source: Primary data

**Table 16.** Reasons for mobile phone changes

Reasons	No. of Respondents	% to total
Prestige/status	8	14.8
Hobby	25	46.3
Due to technical fault	21	38.8
Total	54	100

Source: Primary data

**Table 17.** Preferred service providers

Brand	No. of Respondents	% to total
Aircel	16	12.8
Reliance	12	9.6
Airtel	24	19.2
Vodafone	49	39.2
Tata Docomo	9	7.2
BSNL	10	8.0
Idea	5	4.0
Total	125	100

Source: Primary data

**Table 18.** Different modes of contact

Mode of contact	No. of Respondents	% to total
Call	52	41.6
Message	49	39.2
Missed calls	24	19.2
Total	125	100

Source: Primary data

### Type of SIM card used

A mobile phone today is the most essential source of communication to manage the affairs of any person. The following table shows the details of the nature of the cards held by the respondents. It is clear from the Table 19 that 109 respondents (87.2%) prefer prepaid card and 16 respondents (12.8%) prefer postpaid card. It is inferred that a majority of the respondents are using prepaid card. The figures show the type of card holders.

### Reasons for preference of prepaid

The Table 20 exhibits the reasons for the preference of prepaid card by the sample respondents.

It is clear from the table that among 109 respondents, 51 respondents (46.79%) prefer prepaid card for knowing the limit to speak, 47 respondents (43.12%) are only for incoming calls and 6 and 7 respondents are choosing prepaid card for less cost and some other reasons respectively. It is inferred that most respondents are choosing prepaid card for knowing the limit to speak.

### Reasons for choosing postpaid card

The Table 21 exhibits the reasons for the preference of postpaid card by the sample respondents. It is accurately vivid from the table that out of 16 respondents, 10 respondents (62.50%) prefer postpaid to avoid tension and 3 respondents (18.75%) each prefer postpaid to avoid the requirements and to avoid the cash for prepaid card.

### Amount of prepaid recharge coupon

The Table 22 shows that the recharge coupon wise classification of respondents.

It is clear from the table that out of 109 respondents, 62 respondents (56.88%) are using recharge coupon which is less than ₹100, 35 respondents (32.11%) are using recharge coupon valued at ₹100–500 and rest of respondents are using recharge coupon more than ₹500. It is inferred that majority of respondents using less than ₹100 recharge coupon.

**Table 19.** Type of SIM card used

Type of card	No. of Respondents	% to total
Prepaid	109	87.2
Postpaid	16	12.8
Total	125	100

Source: Primary data

**Table 20.** Reasons for preference of prepaid

Reasons	No. of Respondents	% to total
Knowing the limit to speak	51	46.79
Only for incoming calls	6	5.51
Less cost	47	43.12
Others	5	4.58
Total	109	100

Source: Primary data

**Table 21.** Reasons for choosing postpaid card

Reasons	No. of Respondents	% to total
To avoid the requirements	3	18.75
To avoid tension	10	62.50
To avoid the cash for prepaid card	3	18.75
Total	16	100

Source: Primary data

**Table 22.** Amount of prepaid recharge coupon

Recharge coupon	No. of Respondents	% to total
Less than ₹100	62	56.88
₹100–500	35	32.11
₹500–1000	9	8.26
₹1000–2000	3	2.75
Total	109	100

Source: Primary data



### Availability of special benefits

The Table 23 shows the details about special benefits enjoyed by the respondents from mobile phone.

It is observed that out of 125 respondents, 101 respondents (80.80%) enjoyed some special benefits from their mobile phone and 24 respondents (19.20%) did not enjoy special benefits from their mobile phone. It is inferred that majority of the respondents enjoyed the special benefits from their mobile phone.

### Special benefits of mobile phone

The researcher has also gathered the information regarding the benefits derived by the respondents by using the mobile phone. The results are presented in the following data.

It is vivid from the table that out of 101 respondents, 22 respondents (21.78%) are benefited from security and privacy, 25 respondents (24.75%) are benefited from wide coverage at low cost, 50 respondents (49.51%) are benefited from entertainment and the remaining 4 are benefited from other benefits. It is found from the study that majority of the users are benefited from entertainment while using the mobile phone.

### Number of years using the service provider

The researcher has also gathered the information about how many years the respondents are using mobile phone service provider in the study area. The results are presented in the Table 25.

It is apparent from the table that 43 respondents (3.3.5%) are using service provider less than 6 months and 18 respondents (14.4%) each using service provider 6–12 months and 2–3 years and 31 respondents (24.8%) are using service providers from 2 to 3 years and 15 respondents (12%) are using service providers for more than 3 years.

### Switch over to other service providers

Nowadays many people frequently change their service provider because of their dissatisfaction. The following table shows the respondents who are planning to switch over to other service providers.

**Table 23.** Availability of special benefits

Special benefits	No. of Respondents	% to total
Enjoyed	101	80.80
Not enjoyed	24	19.20
Total	125	100

Source: Primary data

**Table 24.** Special benefits of mobile phone

Type of benefits	No. of Respondents	% to total
Security and privacy	22	21.78
Wide coverage at low cost	25	24.75
Entertainment	50	49.51
Others	4	3.96
Total	101	100

Source: Primary data

**Table 25.** Number of years of using service provider

No. of years	No. of Respondents	% to total
Less than 6 months	43	34.4
6–12 months	18	14.4
1–2 years	31	24.8
2–3 years	18	14.4
More than 3 years	15	12.0
Total	125	100

Source: Primary data

**Table 26.** Switch over to other service providers

Statements	No. of Respondents	% to total
Planning	96	76.8
Unplanning	29	23.2
Total	125	100

Source: Primary data

The Table 26 shows that out of 125 respondents, 96 respondents (76.8%) are planning to switch over to other service providers and remaining respondents are planning to stay with the same service provider. It is inferred that majority of the respondents are planning to switch over to other service providers.

### Service providers to which switch over

The following table shows that the preferred service providers of the respondents who are planning to switch over to other service providers.

It is revealed from the above table out of 96 respondents, 23 respondents (23.96%) plan to change to Vodafone service provider, 20 respondents (20.38%) each plan to move to Reliance and Airtel respectively, 14 respondents (14.58%) plan to move to Aircel, 11 respondents (11.46%) plan to move to Tata Docomo and remaining respondents (8.34%) plan to move to BSNL. It is inferred that majority of respondents change to Vodafone service provider.

### Factors to select service providers

The Table 28 explains the factors behind the selection of a service provider.

The Table 28 discloses that the 52 respondents (41.6%) are motivated by their friends, 45 respondents (36%) are motivated by their family members, 16 respondents (12.8%) are motivated by the advertisement and 7 and 5 respondents are motivated by the shopkeeper and gifted respectively. It is inferred that majority of respondents are motivated by their friends.

### Reasons to select mobile phone as communication media

The following Table 29 shows the reasons for selecting mobile phone as communication media.

It is understood from the table that 40 respondents (32%) choose mobile phone for its convenience, 21 respondents (16.8%) choose mobile phone for the reason of low cost, 12 respondents (9.6%) each select mobile phone for easy accessibility and no fixed installation and 19 respondents (15.2%) select mobile phone

for SMS purpose. It is inferred that majority of respondents select mobile phone for its more convenience.

**Table 27.** Service providers to which switch over

Service provider	No. of Respondents	% to total
Aircel	14	14.58
Reliance	20	20.83
Airtel	20	20.83
Vodafone	23	23.96
Tata Docomo	11	11.46
BSNL	8	8.34
Total	96	100

Source: Primary data

**Table 28.** Factors to select service providers

Factors	No. of Respondents	% to total
Advertisement	16	12.8
Friends	52	41.6
Family members	45	36
Shopkeepers	7	5.6
Gifted	5	4
Total	125	100

Source: Primary data

**Table 29.** Reasons to select mobile phone as communication media

Reasons	No. of Respondents	% to total
Low cost	21	16.8
More convenient	40	32.00
Easy accessibility	12	9.6
Wireless communication	11	8.8
No fixed installation	12	9.6
SMS service	19	15.2
Identifying the missed calls	9	7.2
Others	1	0.8
Total	125	100

Source: Primary data



**Sources to know arrival of New Technology in mobile phone**

Nowadays with the advent of new technologies mobile phones have gone latest. The researcher has also analysed the arrival of new technology in mobile phone.

The above table clearly points out that out of 125 respondents, 51 respondents (40.8%) know the new arrival of a new technology through friends, 29 respondents (23.2%) get to know of the new technology through advertisements, 27 respondents (21.6%) know it through family members and 9, 8 and 1 respondents know technology through neighbours, or display in a shop and others respectively.

**Overall opinion about mobile phone and service providers**

Respondents were asked to mention their degree of agreement on these statements and points were assigned then sum of the assigned weight points were added together and calculated values of the weighted points for different factors are given in the following table.

The analysis of the collected data revealed that out of total 5578 points of level of agreement, a significant portion of 497 point representing 3.98% were obtained for them,

**Table 30.** Sources of arrival of new technology in mobile phone

Factors	No. of Respondents	% to total
Through family members	27	21.6
Through friends	51	40.8
Through neighbors	9	7.2
Through advertisement	29	23.2
Through display in a shop	8	6.4
Others	1	0.8
<b>Total</b>	<b>125</b>	<b>100</b>

Source: Primary data

“price”, followed by 476 points (3.81%) for “style or look”, 438 points (3.50%) for “feature” and “portability”, 435 points (3.48%) for “easy repairability” and “net working”, 428 points (3.42%) for “cost of scheme”, 427 points (3.41) for “free message services”, 408 points (3.26%) for “free talk time offer”, 404 points (3.23%) for “plan option call charges”, 400 points (3.20%) for “monthly rental charges”, 397 points (3.18%) for “resale value” and 395 points (3.16%) for “activation formalities”.

**Chi-square test**

Chi-square is a statistical test commonly used to

**Table 31.** Overall opinion about mobile phone and service providers

Statements	SS	P	S	P	N	P	D	P	SD	P	Total	P	%
Price	38	190	59	236	17	51	9	18	2	2	125	497	3.98
Style or look	22	110	66	264	30	90	5	10	2	2	125	476	3.81
Feature	21	105	50	200	30	90	19	38	5	5	125	438	3.50
Resale value	20	100	36	144	27	81	30	60	12	12	125	397	3.18
Portability	25	125	46	184	32	96	11	22	11	11	125	438	3.50
Easy repairability	26	130	45	180	25	75	21	42	8	8	125	435	3.48
Mothly rental charges	15	75	38	152	37	111	25	50	12	12	125	400	3.20
Networking	32	160	41	164	22	66	15	30	15	15	125	435	3.48
Cost of scheme	23	115	43	172	30	90	22	44	7	7	125	428	3.42
Free message services	26	130	42	16	28	84	16	32	13	13	125	427	3.41
Free talk time offer	22	110	41	164	25	75	22	44	15	15	125	408	3.26
Plan option call charges	17	85	34	136	43	129	23	46	8	8	125	404	3.23
Activation formalities	18	90	38	152	30	90	24	48	15	15	125	395	3.16
<b>Total</b>		<b>1525</b>		<b>2316</b>		<b>1128</b>		<b>484</b>		<b>125</b>		<b>5578</b>	

SS-Strongly Satisfy; S-Satisfy; N-Neutral; D-Dissatisfy; SD-Strongly Dissatisfy; P-Points

compare observed data with data we would expect to obtain according to a specific hypothesis. A Chi-square test, also referred to as chi-square test or  $\chi^2$  test, is any statistical hypothesis test in which the sampling distribution of the test statistic is a Chi-squared distribution when the null hypothesis is true, or any in which this is asymptotically true, meaning that the sampling distribution (if the null hypothesis is true) can be made to approximate a Chi-squared distribution as closely as desired by making the sample size large enough<sup>[7]</sup>.

**Chi-square formula**

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Where, O = Observed frequency  
E= Expected frequency

The following null hypotheses are framed for analyzing the opinion about mobile phone and service providers.

- i. There is no significant relationship between gender and opinion about mobile phone and service providers.
- ii. There is no significant relationship between monthly income of the family and opinion about mobile phone and its service providers.

If the calculated value is greater than the value at a particular confidence level, say 0.05 levels, it is concluded that the level of students opinion is depended on the variable for which Chi-square is computed. If the calculated value is less than the table, it is concluded that the level of students opinion in independent of variable.

**Factors influencing the level of opinion about mobile phone and service providers**

The following variables have been identified as the factors influencing the attitude of the respondents.

- i. Gender
- ii. Monthly income level of the family

If calculated value is greater than the table value at a particular confidence level, say 0.05 levels, it is concluded that the level of students opinion

is depended on the variable for which Chi-square is computed. If the calculated value is less than the table, it is concluded that the level of students' opinion is independent of the variable.

**Relation between gender and opinion about mobile phone and service provider**

Table 32 indicates that the relationship between gender wise classification of the respondents and opinion about mobile phone and service providers.

Table 32 reveals that out of the 67 respondents in the gender of male, 11 respondents have high level of opinion, 41 respondents have medium level of opinion and 15 respondents have low level of opinion regarding the mobile phone and service provider.

Out of 58 female respondents, 15 respondents have high level of opinion, 35 respondents have medium level of opinion and 8 respondents have low level of opinion regarding the mobile phone and service provider.

**Table 32.** Relationship between gender and opinion about mobile phone and service provider

Gender	High	Medium	Low	Total
Male	11(13.94)	41(40.74)	15(12.32)	67
Female	15(12.06)	35(35.26)	8(10.68)	58
Total	26	76	23	125

**Table 33.** Chi-square test for opinion about mobile phone and service provider

CELL	O	E	(O-E)	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
R <sub>1</sub> C <sub>1</sub>	11	13.94	-2.94	8.6436	0.620057
R <sub>1</sub> C <sub>2</sub>	41	40.74	0.26	0.0676	0.001659
R <sub>1</sub> C <sub>3</sub>	15	12.32	2.68	7.1824	0.582987
R <sub>2</sub> C <sub>1</sub>	15	12.06	2.94	8.6436	0.716716
R <sub>2</sub> C <sub>2</sub>	35	35.26	-0.26	0.0676	0.001917
R <sub>2</sub> C <sub>3</sub>	8	10.68	-2.68	7.1824	0.672509
Total					2.595847



In order to find out whether there is any significant relationship between the gender and opinion about mobile phone, Chi-square test has been applied. Table 33 shows the calculation of Chi-square test.

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

$$\chi^2 = 2.595847$$

Degree of Freedom=(r-1) (c-1)  
 (2-1) (3-1)  
 1x2  
 2

The table value of  $\chi^2$  for 2 degree of freedom at 5% level of significance is 5.991. The calculated value of  $\chi^2$  is 2.595847, which is less than the tabled value. Therefore, the hypothesis is accepted. Hence it is concluded that there is no significant relationship between gender and opinion about mobile phone and its service providers.

In order to find out whether there is any significant relationship between the monthly income of respondents and opinion about mobile phone and service providers, a two way table has been framed. Table 34 elucidates the monthly income and opinion level of respondents regarding mobile phone and service provider.

Table 34 exhibits that out of 125 respondents, 53 respondents' family monthly income upto ₹5000, 10 respondents have high level of opinion, 34 respondents have medium level of opinion and 9 respondents have low level of opinion regarding the mobile phone and service providers.

**Table 34.** Relationship between income level of family and opinion about mobile phone and service provider

Income	High	Medium	Low	Total
>₹5000	10(11.02)	34(32.23)	9(9.75)	53
₹5000-10000	6(8.74)	29(25.53)	7(7.73)	42
₹10000-15000	3(2.50)	4(7.30)	5(2.20)	12
<₹15000	7(3.74)	9(10.94)	2(3.32)	18
Total	26	76	23	125

Forty-two respondents' family monthly income between ₹5000 and ₹10000, 6 respondents have high level of opinion, 29 respondents have medium level of opinion and 7 respondents have low level of opinion regarding mobile phone and service providers.

Twelve respondents' family monthly income is between ₹10000 and ₹15000, 3 respondents have high level of opinion, 4 respondents have medium level of opinion and 5 respondents have low level of opinion regarding mobile phone and service providers.

Eighteen respondents' family monthly income is more than ₹15000, 7 respondents have high level of opinion, 9 respondents have medium level of opinion and 2 respondents have low level of opinion regarding mobile phone and service providers.

**Table 35.** Chi-square test for of family monthly income level and opinion about mobile phone and service providers

CELL	O	E	(O-E)	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
R <sub>1</sub> C <sub>1</sub>	10	11.02	-1.02	1.0404	0.09441
R <sub>1</sub> C <sub>2</sub>	34	32.23	1.77	3.1329	0.097204
R <sub>1</sub> C <sub>3</sub>	9	9.75	-0.75	0.5625	0.057692
R <sub>2</sub> C <sub>1</sub>	6	8.74	-2.74	7.5076	0.858993
R <sub>2</sub> C <sub>2</sub>	29	25.53	3.47	12.0409	0.471637
R <sub>2</sub> C <sub>3</sub>	7	7.73	-0.73	0.5329	0.068939
R <sub>3</sub> C <sub>1</sub>	3	2.5	0.5	0.25	0.1
R <sub>3</sub> C <sub>2</sub>	4	7.3	-3.3	10.89	1.491781
R <sub>3</sub> C <sub>3</sub>	5	2.2	2.8	7.84	3.563636
R <sub>4</sub> C <sub>1</sub>	7	3.74	3.26	10.6276	2.841604
R <sub>4</sub> C <sub>2</sub>	9	10.94	-1.94	3.7636	0.344022
R <sub>4</sub> C <sub>3</sub>	2	3.32	-1.32	1.7424	0.524819
Total					10.51474

In order to find out whether there is any significant relationship between the monthly income of family and opinion about mobile phone and service providers, Chi-square test has been applied. Table 35 shows the calculation of Chi-square test.

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

$$\chi^2 = 10.51474$$

$$\begin{array}{l} \text{Degree of Freedom} = (r-1) \quad (c-1) \\ \quad \quad \quad \quad \quad (4-1) \quad (3-1) \\ \quad \quad \quad \quad \quad 3 \times 2 \\ \quad \quad \quad \quad \quad 2 \end{array}$$

The table value of  $\chi^2$  for 6 degree of freedom at 5% level of significance is **11.070**. The calculated value of  $\chi^2$  is **10.51474**, which is less than the tabled value. Therefore, the hypothesis is accepted. Hence, it is concluded that there is no significant relationship between family income and opinion about mobile phone and its service providers.

## FINDINGS

The findings of this chapter are as follows:

1. From the gender wise classification of the users, it is observed that 53.60% of the respondents who use mobile phones are male.
2. While considering the marital status of the users, it is clear that 91.20% respondents are unmarried.
3. The analysis of the family monthly income of the respondents indicates that 42.40% of the respondents come under the income group of up to ₹5000.
4. The researcher investigated that, 48 students (38.4%) are using two mobile phones in their family.
5. Brand names of the mobile phone of the students strongly prefer that nearly 58.4% of the respondents prefer NOKIA handsets.
6. The cost wise classification of the students reveals the fact that 56% of the respondents come under cost of mobile phone ₹1500–3000.
7. The researcher investigated that, 117 respondents (93.6%) purchase mobile phone cash down.
8. The researcher also has investigated the number of years using the mobile phone. It reveals that 48% of the respondents use mobile phone in less than 2 years.
9. The researcher observes that the students take preliminary steps to buying a particular brand of mobile phone. Most of the respondents (36.8%) obtain the opinion of friends.
10. The researcher also has investigated the opinion about price of mobile phone. It reveals that 44% of the respondents opine that the price is reasonable.
11. While considering the nature of call mostly attended by the students. It is observed that, 56.80% of the respondents use mobile phone for both incoming and outgoing call purposes.
12. The researcher also observed that the respondents received calls per day. It reveals that most of the respondents (64.80%) receive less than 10 calls per day.
13. The researcher also has investigated the dialled calls details of the respondents. It reveals that majority of the respondents (62.40%) dialled less than 10 calls per day.
14. The researcher also observed that knowledge of the respondents about the facilities available in mobile phone. It reveals that most of the students (86.40%) have knowledge about the facilities available in mobile phone.
15. It is found that 23.15% of the students know the net connection facilities in their mobile phone.
16. The researcher made attempt to know the number of SIM card used in students' mobile phone. It reveals that 64 students have dual SIM card facilities in their mobile phone.
17. The study has also extended to know the reasons for replace the mobile phone by the sample respondents. Among 46.30% of the respondents are changing the mobile phone for the reason due to hobby.
18. Brand names of mobile phone service provider of students strongly prefer that



- nearly 39.20% of the respondents prefer Vodafone.
19. The researcher observed that the students took different modes to contact others. Most of the respondents (41.60%) contact others by using a call.
  20. The researcher has made an attempt to know the type of SIM card used. Among 109 students are used only prepaid card.
  21. The reasons for giving preference to prepaid card are examined and it can be seen that 46.79% of the students feel that knowing the limit to speak.
  22. In connection with the above analyses, the reasons for giving post paid card is examined and it is seen that 62.50% of the students feel that to avoid tension.
  23. The researcher also observed that the students used amount of prepaid recharge coupon. It reveals that majority of the students (56.88%) used recharge coupon of amount less than ₹100.
  24. It is found that most of students (80.80%) enjoyed special benefits from their mobile phones.
  25. The researcher has also gathered the information regarding the benefits derived by respondents by using mobile phone. It is found from study that majority of the students (49.51%) benefited from entertainment while using the mobile phone.
  26. The researcher also has investigated the number of years using the service provider. It reveals that, 34.40% of the respondents using service provider less than in 3 months.
  27. The researcher has also interested in investigating the students planning to switch over to other service providers. It reveals that, most of the respondents (76.8%) are planning to switch over to other service providers.
  28. The researcher observes that, the preferred service providers of respondents who are planning to switch over to other service providers. Most of the students (23.96%) change to Vodafone service providers.
  29. The researcher observes that, the students take preliminary steps to buy a particular brand of SIM card. Most of the respondents (41.60%) obtained the opinion of their friends.
  30. The researcher investigated the students to know the reasons for selecting mobile phone as communication media. It reveals that, 40 respondents (32%) select mobile phone for its more convenience.
  31. It is found that, most of the students (40.8%) know the arrival of new technology through their friends.

## SUGGESTIONS

The following suggestions are offered to improve the service rendered by the mobile phone service providers.

1. Most of the college students are like mobile phone which has dual SIM card facility. Hence the mobile handset companies introduce different kinds of dual SIM mobile phone to college students.
2. Most of the college students are using prepaid card. Hence the mobile service providers focus on prepaid plans.
3. Most of the college students are using recharge coupon up to ₹100. Therefore, the mobile service providers launch mini packet recharge coupon for college students.
4. Most of the students are using mobile phone for the purpose of internet connection. Hence the mobile handset companies concentrate on the mobile broadband scheme.
5. The students are also willing to have new technologies, facilities and service offered

in developed countries. It is noteworthy to suggest that all kinds of new services and facilities maybe introduced.

6. The respondents are faced with some more problems while using mobile phone like poor network connection, battery problem and so on. Poor network problem arises due to the reason for tower facility of mobile phone. Therefore, it is on the part of service providers to increase the tower facility.

## CONCLUSION

Mobile phones are now an indispensable tool for communication exchange among young people. This study sought to obtain more information on mobile phone usage patterns of college students. Under this study the researcher concluded that there is no significant relationship between gender and opinion about mobile phone and service providers and also there is no significant relationship between family monthly income and opinion about mobile phone and service providers.

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# How masculinity can affect the patron decision while investing in Mutual funds with evidence to Moradabad

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## Abstract

*The concept of mutual funds was generated in the 18th century. Since then it has become an important investment instrument for many patrons as it provides a wide range of diversification within its products. Mutual funds, on Indian Securities markets have become a significant mechanism of price discovery, portfolio diversification and risk hedging in recent times. Knowing the perception of mutual funds patron can help these institutions to market their schemes in a better way. Many patrons understand that investing in the securities market can help put them on the path to their financial objective and what is the best time to be in investment. In this study we want to highlight the gender differentiation while investing in mutual funds with special reference to B class cities like Moradabad (in Uttar Pradesh) and also the best phase of investment in it. The study includes time factor and awareness factor for ascertaining the view of the investors.*

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**Keywords:** Respondents' Perception, Gender, Mutual Funds, Mutual Fund Schemes, Patron's Behaviour

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## INTRODUCTION

From the past scenario it has been observed and analyzed that the growth of Mutual Funds is very slow and steady. The concept of mutual funds was generated in Netherlands in the 18 century and later on moved to Switzerland Scotland and the US in the 19 century. The main role of mutual funds is to provide the diversified investment portfolio to the investor. With the passage of time ideas developed and people received more and more choices of diversified portfolios. The Mutual funds were

introduced in India in 1960. And the credit for the same goes to Unit Trust of India (UTI). After two decades of UTI monopoly some public sector organizations like LIC (1989), GIC (1991), SBI (1987), Can Bank (1987), and Indian Bank (1990) were permitted to set up mutual funds.

A mutual fund is a trust that pools the savings of the investor who shares the financial goal. According to it the process money is collected and invested by the fund manager in different types of securities depending upon the objective of the scheme. This can vary from

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Equity funds to hybrid funds to Debt Funds and a New Addition Tax Saving funds. The methods and ways of selling these funds also changed with time.

Mutual funds are the most suitable investment for the common man as it offers an opportunity to invest in a diversified, professionally managed portfolio at a relatively low cost. Every Mutual fund scheme has a definite investment objective and strategy. Experts say the growth of mutual funds has not stopped and it will evolve into a better future where the patron will get newer opportunities.

A success of any industry is determined by the market performance of its stock. It is a human tendency that we only opt for those things which are profitable for us. So, an investor believes in investing only in those companies which provide maximum gain or profitability. Earlier, patrons were having limited avenues to invest their money, but with the passage of time patrons got new platform with large no of opportunities provided by the different companies.

This is the result of combined efforts of the brokerage houses and the fund managers who come to one's rescue by educating the patron and making them aware of the mutual fund schemes by different modes of promotion.

The important characteristics of mutual funds are:

1. Patron purchase mutual fund shares from the fund itself (or through a broker for the fund) instead of from the other patron on a secondary market, such as the New York Stock Exchange or Nasdaq Stock Market.
2. The price that patron pays for mutual fund shares is the fund's per share net asset value (NAV) plus any shareholder fees that the fund imposes at the time of purchase (such as sales loads).
3. Mutual funds generally create and sell new shares to accommodate new patron. In other words, they sell their shares on a continuous basis, although some funds stop selling when, for example, they become too large.

4. The investment portfolios of mutual funds typically are managed by separate entities known as "Investment advisers" that are registered with the SEC.

## REVIEW OF LITERATURE

A number of studies have been made on the working of Mutual Fund industry. Many of them are general topics like study of operations, growth and development of Mutual Funds, perceptual views of investors on Mutual Funds.

In this sequence, Nalini Prava Tripathy (2006)<sup>1</sup> in her empirical study "Market Timing Abilities and Mutual Fund Performance—An Empirical Investigation into Equity Linked Saving Schemes" evaluated the market timing abilities of Indian Fund managers of 31 tax planning schemes in India over the period December, 1995 to January, 2004 by using Jensen and Mazuy Model and Henriksson and Merton model. The study indicates that the Fund managers have not been successful in reaping returns in excess of the market; rather they are timing the market in the wrong direction.

P. Hnaumantha Rao and Vijay K.R. Mishra (2007) in their article "Mutual Fund: A Resource Mobiliser in Financial Market" made a critical study of the role performed by Mutual Funds as a financial service in Indian Financial Market.

Gajendra Sidana and Debashis Acharya (2007)<sup>3</sup> in their article "Classifying Mutual Funds in India: Some Results from Clustering" made an attempt to classify hundred Mutual Funds employing cluster analysis and using a host of criteria like the 1-year annualized return, 3-year annualized return, 5-year annualized return, alpha, beta, R-squared, Sharpe's ratio, mean and Standard deviation, etc.

S.K. Miglani (2007)<sup>4</sup> in his study made an attempt to understand the Mutual Fund industry and its implications on the common investors on one hand and its returns and performance on the other. An analysis was made on the perceptual views of investors in "Investment Decision Making: An empirical study of perceptual View of Investors" by Yesh Pal Davar and Suveera Gill (2007)<sup>5</sup>. The results of this study suggest that investor's preferences are supposedly related to



the actual performance of investments and the same is taken into account while forming an opinion about making future investment decision.

In their study entitled "A study on Investors perception towards Mutual Fund investments", S. Sudalaimuthu and P. Senthil Kumar (2008)<sup>6</sup> concentrated on highlighting the investor awareness and preference in Mutual Fund schemes, factor that influences the investor in selecting Mutual Fund scheme, the level of satisfaction on the investment of Mutual Fund, problems faced by Mutual Fund investors and the investment objectives, preference among Fund types (balanced, growth, dividend, etc.).

An Empirical Study of "Indian Individual Investors' Behaviour" by Syed. Tabassum Sultana (2010)<sup>7</sup> was an attempt to know the profile of the investors and also to know their characteristics so as to know their preference with respect to their investments. The study also tried to unravel the influence of demographic factors like gender and age on risk tolerance level of the investors.

## RESEARCH OBJECTIVES

To analyse the effect of investor's gender on mutual fund investment in Moradabad region

## HYPOTHESIS

Here the following assumptions are proposed to measure the satisfaction level of employees.

### Null hypothesis

H0: Gender plays a positive impact on the investment of mutual funds by the investor.

H0: Investors are satisfied with Mutual funds returns.

### Alternate hypothesis

H1: Gender plays a negative impact on the investment of mutual funds by the investor.

H1: Investors are not satisfied with mutual funds returns.

## RESEARCH METHODOLOGY

**Instrument of survey:** We have taken questionnaire as an instrument of survey. This questionnaire contains the questions related to the impact of gender on investors while investing in mutual funds. Primary data is collected through questionnaire and secondary data is collected through various magazines, Internet and books.

**Sampling method:** Data collected for this study comprises convenient and random sampling.

**Sampling unit:** Sampling unit covers the professional male and female Investors.

**Sample size:** 150 investors of different profession

**Sampling area:** Survey has been conducted in Moradabad region.

**Statistical tools and technique:** Chi-square test is applied in testing the hypothesis.

## ANALYSIS OF DATA

These questions are designed to judge the satisfaction level and cover all aspects that relate

**Table 1.** Gender of Respondents

Male	112
Female	38
Total	150

**Table 2.** Familiarity with Mutual funds

Questionnaire response table

	Male	Female	Total
Yes	81	35	116
No	31	3	34
Total	112	38	150

Chi-square test

Fo	Fe	fo-fe	(fo-fe) <sup>2</sup>	[(fo-fe) <sup>2</sup> ]/fe
81	86.61	-5.61	31.51	0.363795156
35	29.39	5.613333333	31.51	1.072238355
31	25.39	5.613333333	31.51	1.241183473
3	8.61	-5.613333333	31.51	3.658224974
150				6.335441958

to the investment in Mutual funds. The analysis of each part covers the questionnaire response, Chi-square test to evaluate hypothesis and interpretation.

$$\chi^2_{cal} = \Sigma(-E)^2/E$$

$$= 6.335$$

$$\text{Degree of freedom (df)} = (R-1)(C-1)$$

$$= (2-1)(2-1)$$

$$df = 1$$

Table value of = 3.841

The table value of  $\chi^2$  for 1 degree of freedom at 5% level of significant is 3.841. Comparing calculated value with table value of  $\chi^2$ , calculated value is more than table value. Therefore, null hypothesis is selected and alternate hypothesis is rejected.

**Table 3.** Income Group of Investors

Questionnaire response table				
	Male	Female	Total	
HIG	39	21	60	
LIG	73	17	90	
Total	112	38	150	

Chi-square test				
Fo	Fe	fo-fe	(fo-fe) <sup>2</sup>	[(fo-fe) <sup>2</sup> ]/fe
39	44.80	-5.80	33.64	0.750892857
21	15.20	5.80	33.64	2.213157895
73	67.20	5.80	33.64	0.500595238
17	22.80	-5.80	33.64	1.475438596
150				4.940084586

**Interpretation**

The above information indicates that among 150 respondents, 122 respondents were familiar with mutual funds while 28 were not.

$$\chi^2_{cal} = \Sigma(O-E)^2/E$$

$$= 4.94$$

$$\text{Degree of freedom (df)} = (R-1)(C-1)$$

$$= (2-1)(2-1)$$

$$df = 1$$

Table value of = 3.841

The table value of  $\chi^2$  for 1 degree of freedom at 5% level of significant is 3.841. Comparing calculated value with table value of  $\chi^2$ , calculated value is more than table value. Therefore, null hypothesis is selected and alternate hypothesis is rejected.

**Table 4.** Sources of Information

Questionnaire response table				
	Male	Female	Total	
Agents	33	8	41	
Direct From Company	11	5	16	
Distribution House	8	6	14	
Friends	11	10	21	
Newspapers & Magazines	49	9	58	
	112	38	150	

Chi-square test				
Fo	Fe	fo-fe	(fo-fe) <sup>2</sup>	[(fo-fe) <sup>2</sup> ]/fe
33	30.61	2.39	5.70	0.186068525
8	10.39	-2.38667	5.70	0.548412495
11	11.95	-0.94667	0.90	0.075014881
5	3.55	1.45	2.11	0.595538847
8	10.45333333	-2.45333	6.02	1.405034748
6	3.546666667	2.453333	6.02	1.697042607
11	15.68	-4.68	21.90	1.396836735
10	5.32	4.68	21.90	4.116992481
49	43.30666667	5.693333	32.41	0.748477011
9	14.69333333	-5.69	32.41	7.959348834
150				9.364383582

**Interpretation**

The above information indicates that, in our research sample major group of investor was lower income group around 73 males, 17 females, where as high income group includes only 39 Males and 21 Females.

$$\chi^2_{cal} = \Sigma(O-E)^2/E$$

$$= 9.364$$

$$\text{Degree of freedom (df)} = (R-1)(C-1)$$

$$= (5-1)(2-1)$$

$$df = 4$$

Table value of = 9.487

The table value of  $\chi^2$  for 4 degree of freedom at 5% level of significant is 9.487. Comparing



calculated value with table value of  $\chi^2$ , calculated value is less than table value. Therefore, null hypothesis is rejected and alternate hypothesis is selected.

**Interpretation**

The above information states an interesting analysis that 49 males invests in mutual fund considering their main source of information is newspapers and magazines whereas female source is friends

**Table 5. Scheme Preference**

Questionnaire response table			
	Male	Female	Total
Debt	53	19	72
Equity	38	10	48
Hybrid	21	9	30
Total	112	38	150

Chi-square Test				
Fo	Fe	fo-fe	(fo-fe) <sup>2</sup>	[(fo-fe) <sup>2</sup> ]/fe
<b>Chi-Square Test</b>				
53	53.76	-0.76	0.58	0.010744
19	18.24	0.76	0.58	0.031667
38	35.84	2.16	4.67	0.130179
10	12.16	-2.16	4.67	0.383684
21	22.40	-1.4	1.96	0.0875
9	7.60	1.4	1.96	0.257895
150				0.901668

$$\chi^2_{cal} = \Sigma(O-E)^2/E$$

$$= 0.9016$$

$$\text{Degree of freedom (df)} = (R-1)(C-1)$$

$$= (3-1)(2-1)$$

$$df = 2$$

Table value of = 5.991

The table value of  $\chi^2$  for 2 degree of freedom at 5% level of significant is 5.991. Comparing calculated value with table value of  $\chi^2$ , calculated value is less than table value. Therefore, null hypothesis is rejected and alternate hypothesis is selected.

**Interpretation**

From the above information 53 males invest in

debt funds as they are safer and secure so as females and only 21 and 9 males and females respectively invest in hybrid

$$\chi^2_{cal} = \Sigma(O-E)^2/E$$

$$= 9.06$$

$$\text{Degree of freedom (df)} = (R-1)(C-1)$$

$$= (2-1)(2-1)$$

$$df = 1$$

Table value of = 3.84

The table value of  $\chi^2$  for 1 degree of freedom at 5% level of significant is 3.841. Comparing calculated value with table value of  $\chi^2$ , calculated value is more than table value. Therefore, null hypothesis is selected and alternate hypothesis is rejected.

**Table 6. Plan Preferences**

Questionnaire response table			
	Male	Female	Total
Growth option	98	25	123
Dividend Option	14	13	27
Total	112	38	150

Chi-square test				
Fo	Fe	fo-fe	(fo-fe) <sup>2</sup>	[(fo-fe) <sup>2</sup> ]/fe
33	30.61	2.39	5.70	0.186068525
8	91.84	6.16	37.95	0.413170732
25	31.16	-6.16	37.95	1.217766367
14	20.16	-6.16	37.95	1.882222222
13	6.84	6.16	37.95	5.547602339
150				9.06076166

**Interpretation**

The above information states that among 150 respondent 98 males and 25 females invest with the growth option and rest 14 and 13 males and Females respectively invest in dividend option.

$$\chi^2_{cal} = \Sigma(O-E)^2/E$$

$$= 0.0373$$

$$\text{Degree of freedom (df)} = (R-1)(C-1)$$

$$= (2-1)(2-1)$$

$$df = 1$$

Table value of = 3.84

**Table 7.** Return Perception

Questionnaire response table				
	Male	Female	Total	
Satisfied	96	31	127	
Non-satisfied	16	7	23	
Total	112	38	150	

Chi-square test				
Fo	Fe	fo-fe	(fo-fe) <sup>2</sup>	[(fo-fe) <sup>2</sup> ]/fe
96	94.83	1.17	1.38	0.014518185
31	32.17	-1.17333	1.38	0.042790441
16	17.17	-1.17333	1.38	0.080165631
7	5.83	1.173333	1.38	0.236277651
150				0.373751908

The table value of  $\chi^2$  for 1 degree of freedom at 5% level of significant is 3.841. Comparing calculated value with table value of  $\chi^2$ , calculated value is less than table value. Therefore, null hypothesis is rejected and alternate hypothesis is selected.

**Interpretation**

The above information indicate that among 150 respondent 96 Males and 31 Females were satisfied with their mutual funds company while 16 and 7 males and female respondent were not satisfied with their preference of their asset management company.

$$\chi^2_{cal} = \Sigma(O-E)^2/E$$

$$= 11.059$$

$$\text{Degree of freedom (df)} = (R-1)(C-1)$$

$$= (4-1)(2-1)$$

$$\text{df} = 3$$

Table value of = 7.814

The table value of  $\chi^2$  for 1 degree of freedom at 5% level of significant is 3.841. Comparing calculated value with table value of  $\chi^2$ , calculated value is more than table value. Therefore, null hypothesis is selected and alternate hypothesis is rejected.

**Interpretation**

This was the main objective which goes first rank in questionnaire filled by investors. The

above information indicates that around 56 males are risk seeker and 27 and 16 males and females respectively are risk averse i.e. they invest for tax purpose.

$$\chi^2_{cal} = \Sigma(O-E)^2/E$$

$$= 0.5483$$

$$\text{Degree of freedom (df)} = (R-1)(C-1)$$

$$= (2-1)(2-1)$$

$$\text{df} = 1$$

Table value of = 3.841

The table value of  $\chi^2$  for 1 degree of freedom at 5% level of significant is 3.841. Comparing calculated value with table value of  $\chi^2$ , calculated value is less than table value. Therefore, null hypothesis is rejected and alternate hypothesis is selected.

**Table 8.** Investment Objective

Questionnaire response table			
	Male	Female	Total
Risk	56	8	64
Return	12	8	20
Tax	27	16	43
Liquidity	17	6	23
Total	112	38	150

Chi-square test				
Fo	Fe	fo-fe	(fo-fe) <sup>2</sup>	[(fo-fe) <sup>2</sup> ]/fe
56	47.79	8.21	67.46	1.411666667
8	16.21	-8.21333	67.46	4.160701754
12	14.93	-2.93333	8.60	0.576190476
8	5.07	2.93	8.60	1.698245614
27	32.11	-5.10667	26.08	0.812231451
16	10.89	5.11	26.08	2.393945328
17	17.17	-0.17333	0.03	0.001749482
6	5.83	0.173333	0.03	0.005156369
150				11.05988714

**Interpretation**

The above analysis states that 78 male’s investors prefer to invest in mutual funds during new funds offer and there are less no of females to invest in different schemes.



**Table 9.** Timing of Investment

Questionnaire response table				
	Male	Female	Total	
NFO Period	78	24	102	
Running Schemes	34	14	48	
Total	112	38	150	
Chi-square test				
Fo	Fe	fo-fe	(fo-fe) <sup>2</sup>	[(fo-fe) <sup>2</sup> ]/fe
56	47.79	8.21	67.46	1.411666667
78	76.16	1.84	3.39	0.044453782
24	25.84	-1.84	3.39	0.131021672
34	35.84	-1.84	3.39	0.094464286
14	12.16	1.84	3.39	0.278421053
150				0.548360792

$$\chi^2_{cal} = \frac{\sum(O-E)^2}{E}$$

$$= 0.342$$

$$\text{Degree of freedom (df)} = (R-1)(C-1)$$

$$= (5-1)(2-1)$$

$$df = 4$$

Table value of = 9.487

The table value of  $\chi^2$  for 1 degree of freedom at 5% level of significant is 3.841. Comparing calculated value with table value of  $\chi^2$ , calculated value is more than table value. Therefore, null hypothesis is selected and alternate hypothesis is rejected.

### Interpretation

The above information indicates that 77 males invest according to their savings and disposable income and it represent that majority of annual investment is around ₹50000.

### CONCLUSION

The present study helps in analyzing the mutual funds effects on investor investment behaviour.

The study includes investors perception and opinion regarding the mutual funds its focus on various issues like types of mutual funds schemes, level of satisfaction, role of financial advisors and broker, source of information, etc. This study also focuses on gender differentiation

**Table 10.** Annual Investment of Investors

Questionnaire response table				
	Male	Female	Total	
0-50,000	77	22	99	
50,001-1 lakh	22	10	32	
1,00,001-3 lakh	8	4	12	
3,00,001-5 lakh	5	2	7	
Above 5 lakh	0	0	0	
Total	112	38	150	
Chi-square test				
Fo	Fe	fo-fe	(fo-fe) <sup>2</sup>	[(fo-fe) <sup>2</sup> ]/fe
77	73.9	3.08	9.49	0.128
22	25.1	-3.08	9.49	0.378
22	23.9	-1.89	3.58	0.150
10	8.1	1.89	3.58	0.442
8	9.0	-0.96	0.92	1.099
4	3.0	0.96	0.92	0.303
5	5.2	-0.23	0.05	0.010
2	1.8	0.23	0.05	0.029
				0.342

and its effect on their investment decision. Analyses include that male respondents are more aware about the mutual funds scheme as compare to female respondents. Today mutual funds companies need to focus on female investors and try to convert the potential investors into the reality investor. New and more innovative schemes should be launched from time to time so that investors' confidence should be maintained. All this will lead to the overall growth and development of the mutual fund industry.

### RECOMMENDATIONS

Mutual Funds Company should focus on female investors and should provide awareness program to them.

Companies should provide an investment security to the investors specially with respect to female investors.

### LIMITATIONS TO THE STUDY

The study is confined to limited investors i.e., 150 patrons of the Moradabad. It was very tough to cover the entire Moradabad region.

Some respondents did not provide their actual feedback about their investment because of fear. They feared that the data could be used for some other purposes.

Most of the respondent had not responded at the expected level.

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# Effect of Derivative Trading on Stock Market Volatility: A Study of Indian Capital Market

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## Abstract:

*The aim of this study is to assess the impact of introducing index and stock futures and options contracts on the volatility of the underlying stock index in India. So many studies have been made to check the effects of futures and options listing on the underlying cash market volatility in the developed and developing markets. The empirical evidence is mixed and most suggest that the introduction of derivatives do not destabilize the underlying market. Previous studies also show that the introduction of derivative contracts improves liquidity and reduction of informational asymmetries in the market. To check the non-constant error variance in the return series, a GARCH (1, 1) model is used by incorporating futures and options dummy variables in the conditional variance equation. We find that there is no stabilization or destabilization effect on market volatility. The post-derivatives period shows that the sensitivity of the index returns to market returns and any day-of-the-week effects have disappeared. Also we found that there is change in the volatility patterns during the post derivative period.*

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**Keywords:** Indian capital market, Volatility

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## INTRODUCTION

The modelling of asset returns volatility continues to be one of the key areas of financial research as it provides substantial information on the risk patterns involved in investment and transaction processes. A number of works have been undertaken in this area. Given the fact that stock market shows high levels of price volatility, which lead to unpredictable outcomes, it is important to examine the dynamics of volatility. The derivatives market was launched mainly with the twin objectives to transfer risk and to

increase liquidity, thereby ensuring better market efficiency. The examination of how far these objectives have materialized is important both theoretically and practically.

The derivatives were launched mainly with the twin objective of risk transfer and to increase liquidity, thereby ensuring better market efficiency. In India, derivatives trading started in June 2000 with the introduction of Index future followed by index options in June 2001, and options and futures on individual securities in July 2001 and November 2001, respectively. Since inception, National Stock Exchange of

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India (NSE) established itself as the sole market leader in this segment in the country and during 2008-09, it accounted for 95% of the market share (NSE, 2012). The total turnover on the F&O Segment was ₹31533003.96 crore during 20012-13. The average daily turnover during 20012-13 was ₹126638.57 crore.

In this paper, we attempt to study the volatility implications of the introduction of derivatives on the cash market. Through this study, we seek evidence regarding whether the listing of futures and options lead to any significant change in the volatility of the cash market in India. We have selected S&P CNX Nifty Index along with seven stocks to which the first derivatives contract was introduced by the NSE in India. In this study we have added option contract along with future contract.

## REVIEW OF LITERATURE

An academic study on the volatility due to future and option in Indian Capital Market is very important and pertinent in the context of its structural existence. Before taking up such exercise, an attempt is made in this section to present a review of the available studies in the area of volatility in the capital market and related area of recent origin in India and abroad. The research studies conducted in the field of volatility in India and abroad relate mostly to institutional, functional and developmental activities of Indian Capital Market.

Hodgson and Nicholas (1991) studied the effect of All Ordinaries Share Price Index (AOI) futures on the Associated Australian Stock Exchanges over the All Ordinaries Share Index and found that the introduction of futures and options trading do not affect the long-term volatility.

Lee and Ohk (1992) studied five most important international index futures markets—Sydney, Hong Kong, Tokyo, London, and New York and they identified that spot market volatility increases following the introduction of Nikkei, FTSE 100 and NYSE indexes. As for the AOI and Hang Sang, no empirical evidence of index futures induced volatility was found.

Robinson (1993) analyzed the daily stock price volatility on the London Stock Exchange

to measure the effect of futures on cash market volatility and concluded that index futures contracts were found to have reduced volatility significantly.

Antoniou and Holmes (1995) examined the relationship between information and volatility in FTSE 100 index in the UK. They found that introduction of FTSE 100 index futures has changed the volatility in the spot market, they concluded this to a better and faster dissemination of information flow due to trading in the stock index futures.

Peat and McCorry (1997) examined the impact of the introduction of Individual Share Futures (ISFs) contracts on the trading behaviour of the underlying equity market on Sydney Futures Exchange and concluded that the introduction of futures contract resulted in a significant increase in both the underlying market trading volume and volatility with no discernible returns effect.

Pericli and Koutmos (1997) analysed the impact of the US S&P 500 index futures on spot market volatility and concluded that index futures did not have an escalating effect on spot market volatility.

Gulen and Mayhew (2000) examined the stock market volatility before and after the introduction of equity-index futures trading in 25 countries, and they found that futures trading increases the volatility in the United States and Japan, but in nearly every other country i.e., either no significant effect or a volatility-dampening effect. Also, they found that spot volatility was independent of changes in futures trading in 18 countries, and that uninformed futures volume had a negative impact on spot volatility in Austria and the UK.

Thenmozhi (2002) examined whether there was any change in the volatility of the S&P CNX Nifty Index in India due to the introduction of Nifty futures and whether movements in futures prices provided predictive information regarding subsequent movements in index prices. The study shows that inception of futures trading has reduced the volatility of spot index returns. The information flow is higher in the post futures period resulting in decline in spot index volatility in the post futures period. Author also found that



the futures have little or no memory effect and infrequent trading is virtually absent in futures market also the future market transmits information to cash market and futures market is faster than spot market in processing information.

Shenbagaraman (2003) examined the impact of the introduction of derivative trading on cash market volatility using data on stock index futures and options contracts traded on the Nifty Index. The author found that the futures and options trading does not change in the volatility of the underlying stock index, but the nature of volatility seem to have changed in the post-futures market. The author also concluded that whether greater futures trading activity in terms of volume and open interest is associated with greater spot market volatility. It found no evidence of any link between trading activity variables in the future and spot market volatility.

Bandivadekar and Ghosh (2003) studied the impact of introduction of index futures on spot market volatility on both S&P CNX Nifty and BSE Sensex using ARCH/GARCH technique. Their empirical analysis points towards a decline in spot market volatility after the introduction of index futures due to increased impact of recent news and reduced effect of uncertainty originating from the old news.

Nath (2003) studied the behaviour of volatility of 20 stocks and two benchmark indexes in the pre and post derivatives period in India using both static and conditional variance after the introduction of futures using the IGARCH model. He concluded that the volatility of the market as measured by Nifty index had fallen in the post-futures period. In case of individual stocks, the result was mixed.

Thenmozhi and Sony (2004) examined the impact of derivatives trading and cash market volatility in the Indian context. The volatility is examined considering the day-of-the-week effect, domestic market factors and world market movements. The study concluded that the introduction of index futures and options has reduced spot market volatility. Persistence of volatility is reduced in post-derivatives period and day-of-the-week effect is found to be insignificant after the introduction of derivatives. The results provided evidence of increased

market efficiency in the Indian stock market after the introduction of derivatives that the reduction of volatility in the underlying stock market had increased market efficiency.

Pok, and Poshakwale (2004) investigated the impact of futures trading on spot market volatility, using data from both the underlying and non-underlying stocks in the emerging Malaysian stock market. Their results show that the onset of futures trading increases spot market volatility and the flow of information to the spot market. It is found that the underlying stocks respond more towards recent news, while the non-underlying stocks respond more to old news. Also they concluded that the impact of the previous day's futures trading activity on volatility is positive but short (only a day).

Antoniou, Koutmos and Pericli (2005) tested the hypothesis that the introduction of index futures has increased positive feedback trading on the spot markets of six industrialized nations. Their findings support the view that futures markets help stabilise the underlying spot markets by reducing the impact of feedback traders and thus attracting more rational investors who make the markets more informational efficient and thus providing investors with superior ways of managing risk.

Vipul (2006) investigates the changes in volatility in the Indian stock market after the introduction of derivatives. He concludes that there is strong evidence of a reduction in the volatility of the underlying shares after the introduction of derivatives. This is largely attributable to a reduced persistence in the previous day's volatility. However, the inter day unconditional volatility of the equity index increases. This contradiction is explained by an increased correlation between the prices of its constituent shares caused by arbitrage transactions in the cash market.

Alexakis (2007) used GJR-GARCH model to investigate the effect of introduction of stock index future on the volatility of spot equity market by taking case of FTSE 20 Index and concluded that the introduction of future contract has not had a detrimental effect on underlying spot market.

Samanta and Samanta (2007) assess the



impact of introducing index futures and stock futures on the volatility of the underlying spot market in India. The sample data consists of daily closing price returns of S&P CNX Nifty, Nifty Junior, and S&P 500 index from October 4, 1995 to December 31, 2006. The result suggests that there is no significant change in the volatility of the spot market of the S&P CNX Nifty Index, but the structure of the volatility has changed to some extent. However, some interesting results in case of introduction of stock futures suggest that it has mixed results in spot market volatility in the case of ten individual stocks.

Drimbetas, Nikolaos and Porfiris (2007) examine the effects of the introduction of the futures and options into the FTSE/ASE 20 index on the volatility of the underlying index. Their result shows that the introduction of derivatives has induced a reduction of the conditional volatility of the FTSE/ASE20 index and consequently it has increased its efficiency.

Mallikarjunappa and Afsal (2007) studied the volatility implications of the introduction of derivatives on the stock market in India using S&P CNX IT index. They found that clustering and persistence of volatility in different degrees before and after derivatives and the listing in futures has increased the market volatility. The sensitivity of the index return to domestic and global return remains same even after the introduction of futures trading. Also authors stated that the nature of the volatility has altered during the post-derivatives period with prices highly dependent on recent innovations which is a sign of improved market efficiency.

Debashis (2008) studied the effect of future trading on volatility and operating efficiency of the underlying Indian stock market by using paired sample statistic and found that introduction of Nifty Index Future trading in India is associated with both reduction in spot price volatility and reduced trading efficiency in underlying stock market.

Debashis (2008) did another study to explore the effect of future trading activity on the jump volatility of stock market by taking case of NSE Nifty stock index. He used multivariate Granger causality modelling technique and found that

future trading is not a force behind episodes of jump volatility.

Mallikarjunappa and Afsal (2008) studied the volatility implications of the introduction of derivatives on stock market volatility in India using the SandP CNX Nifty Index as a benchmark. They concluded their research as clustering and persistence of volatility before and after derivatives, while listing seems to have no stabilisation or destabilisation effects on market volatility. The post derivatives period shows that the sensitivity of the index returns to market returns and any day-of-the-week effects have disappeared. That is, the nature of the volatility patterns has altered during the post-derivatives period.

Caglayan (2011) investigates the impact of the introduction of index futures on the volatility of the underlying Turkish spot market. The results indicate that there have been significant changes in the structure of volatility in the ISE30 spot market, following the onset of futures trading. It has also been found that the asymmetric effect is relevant in the post-futures period.

## OBJECTIVES

The objectives are as follows:

1. To study the impact of introducing index and stock futures and options contracts on the volatility of the stock and index.
2. To study that either introduction of derivatives destabilise the underlying market or not.
3. To examine the week day effect, before and after introduction of the derivative contracts.
4. To examine, whether any structural change in volatility pattern, after introduction of derivative contracts.

## Data Set

To satisfy the objectives the data period starts from 1<sup>st</sup> April 2001 to 31<sup>st</sup> March 2011. The data used in this category is based on Secondary data, collected in the form of CD ROMS from



national stock exchange and its official website, consider that data sources used as highly reliable due to its function for the financial markets and is core business competences within data supply and gathering. Data were analysed through SAS (version 8.2) and SPSS (version 19) software.

### Date of Introduction of Derivative Contract

The National Stock Exchange of India Limited (NSE) commenced trading in derivatives with the launch of index futures on June 12, 2000. The futures contracts are based on the popular benchmark S&P CNX Nifty Index. The Exchange introduced trading in Index Options (also based on Nifty) on June 4, 2001. NSE also became the first exchange to launch trading in options on individual securities from July 2, 2001. Futures on individual securities were introduced on November 9, 2001. Futures and Options on individual securities are available on 149 securities stipulated by SEBI. Date of launching of derivative contract has been taken as a cut off date. The cut-off date for the sample size is given in the Table 1.

### Research Methodology

The econometric literature provides a range of

models (GARCH, VAR, etc) to become cognizant about the facts of financial time series. Although present study is based on volatility measures and destabilizing problems with the instruments like derivative, for this purpose ARMA-GARCH (1, 1) model was used, as the volatility model that meet the requirements of capturing the statistical properties of the return data. In this section, different elements were explored which included in GARCH (1, 1) model. First of all, the autoregressive moving average (ARMA) processes were investigated in the conditional mean specification part of the model. After the confirmation of ARMA, the presence of ARCH was checked. The GARCH framework was referred to as the first moment of financial time series. After that, generalised autoregressive conditional heteroscedasticity (GARCH) processes were described in the conditional variance specification part, which was referred to as the second moment of financial time series.

Moreover, in line with the Symmetric GARCH framework of conditional variance, a dummy variable was added in order to capture the effect of future and option on volatility, that is, the circumstance that negative shocks tend to have a larger impact on the volatility than positive shocks.

**Table 1.** Stock description

Name	Registered name	NSEID	Total period	Cut-off date	
				Future contract	Option contract
ACC	ACC Limited	INE012A01025		09/11/2001	02/07/2001
BHEL	Bharat Heavy Electricals Limited	INE257A01026		09/11/2001	02/07/2001
BPCL	Bharat Petroleum Corporation Limited	INE029A01011		09/11/2001	02/07/2001
Dr. Reddys	Dr. Reddy's Laboratories Limited	INE089A01023		09/11/2001	02/07/2001
ITC	ITC Limited	INE154A01025		09/11/2001	02/07/2001
M&M	Mahindra & Mahindra Limited	INE101A01026	01/04/1998 to	09/11/2001	02/07/2001
MTNL	Mahanagar Telephone Nigam Limited	INE153A01019	31/3/2011	09/11/2001	02/07/2001
Nifty	CNX Nifty	—		12/06/2001	04/06/2001

### ARMA-GARCH (1, 1) Modelling

In the first two objectives the main focus was on two aspects, first it was, how the initial introduction of derivative contracts impact cash market. To investigate this issue, a dummy variable was introduced into the conditional variance equation that measures volatility.

Hence equation 1 and 2 estimated as:

$$Y_t = \alpha_0 + \alpha_1 \chi_t + \varepsilon_t, \text{ where } \varepsilon_t / Y_{t-1} \sim N(0, \sigma_t^2) \quad 1$$

$$\sigma_t^2 = \beta_0 + \sum_{j=1}^p \beta_j \varepsilon_{t-j}^2 + \sum_{j=1}^q \beta_j \sigma_{t-j}^2 + \gamma_0 D \quad 2$$

D is a dummy variable, we have taken the value of dummy variable zero before futures and options introduction. If the time is prior to future or options introduction and one after the introduction of future and option. If the coefficient of this dummy variable is not statistically significant, then the introduction derivative contracts has no impact on spot market volatility. The sign of the coefficient shows that the positive value implies a rise in spot market volatility with the introduction of futures/options trading and vice versa.

It is to be noted that any change in market behaviour, including volatility is almost always a result of a mixture of factors. However, our interest was only in the effect of derivatives during inception on the volatility of Indian capital. To remove the effect of world events we have added the lagged return of Dow Jones index. Also it was compulsory to control the any big event in the Indian economy we have added the returns of Nifty Juniors. The Nifty Junior returns help us in two ways, first we can understand the effect of derivatives and second Nifty Junior does not have any derivative contract so that the earlier one can be predicted easily. As such, it serves as a perfect control variable for us to isolate the effect of any big event in the market and hence we can concentrate only on the volatility of the Nifty.

### Week Day Effect

Prior studies have also reported day-of-the-week effect on returns. Also we have examined the effect of the rollover of contract in the next month and current month settlement process, to clarify week day effects exist even today. The

dummy in mean equation was added. The following conditional mean equation is estimated as follows:

$$R_t = \alpha_0 + \alpha_1 R_{t, NJ} + \alpha_2 R_{Dj/t-1} + \sum_{k=1}^s D_k + U_t \quad 20$$

$R_{index, t}$  = Daily return on the individual stock/index, calculated at 1<sup>st</sup> difference of log of stock or index,

$\alpha_1 R_{t, NJ}$  = return of Nifty Junior index,

$\alpha_2 R_{Dj/t-1}$  = First difference of the log of the index, and it is the lagged Dow Jones index return,

$D_i$  = are day-of-the-week dummy variables for Monday to Friday.

$U_t$  = residual term assumed to be distributed  $N(0, \sigma_t^2)$

To investigate the second issue, the sample was divided into the pre-futures and post-futures sub-sample and a GARCH model is estimated separately for each sub-sample. This allows the researcher to compare the nature of volatility before and after the onset of futures trading. The impact of stock index futures and option contract introduction in the Indian market is examined using a univariate GARCH (1, 1) model. The time series of daily returns on the S&P CNX Nifty Index is modelled as a univariate GARCH process. To check the stability of parameter Chow test was applied, this allows the researcher, to check the volatility between two periods.

### RESULTS AND DISCUSSION

Time series were subject to check the stationarity. For this purpose we applied the augmented Dickey fuller test. The Dickey fuller test applied on the return series of the spot price of all companies and CNX S&P Nifty Index. The hypothesis developed by Kapetanios *et al.* (2003) of non-stationary series was used against stationary non-linear alternatives. The established hypothesis are as follows:

$H_0: \delta=0$ , (that time series do not show any stationary effect at a given level of significance) and,  $H_1: \delta<0$ : (that time series shows the stationary effect at given level of significance).

After complete analysis of Table 2, it was clear that all time series does not show any



stationarity at levelled analysis of augmented Dickey Fuller test, and accept the null hypothesis that all time series were non stationary at levelled analysis and accepts the alternate hypothesis that time series are stationary at levelled analysis. At first difference (lag) all time series were found to be stationary.

Table 3 provides the descriptive statistics of the daily returns for the companies and index. The daily time series observations on the basis of closing price had been mentioned in the parenthesis of the period. The period was divided under study into pre-futures and post-futures periods using cut-off dates given in the Table 1, to study symmetric nature of the time series three test—Skewness, Kurtosis and Jarque Bera—had been applied to check whether time series was normally distributed or not. For a normal distribution the skewness was zero. A distribution skewed to the right had positive skewness and a distribution skewed to the left had negative skewness. For the normal distribution, Kurtosis gave a measure of the thickness in the tails of a probability density function. For a normal distribution the Kurtosis should be three. It followed that, for a normal distribution, the excess Kurtosis treated as zero. If Kurtosis exceeded three, then the problem of Leptokurtosis would arise. The Jarque-Bera test for normality followed the Chi-square distribution.

Table 3 shows the descriptive statistic of returns of individual stock and S&P CNX Nifty

for pre-derivatives and post-derivatives period. The mean value of all stock as well as Nifty has been increased during post future and option period. The reasons for the better returns after the post-derivative period was high trading, development and regulations in the capital market. Standard deviation had been taken as a measure of volatility, decreased from in all companies except ITC from the pre-futures period to the post-futures period.

A similar result was shown with respect to the pre-options and post-options periods. This result shows that there was a decrease in spread with the introduction of futures and options trading. The time series was negatively skewed in all companies except MTNL. Returns shows the evidence of fat tails in whole period and post-future and option period, since the Kurtosis exceeds three, which was the normal value, while the problem of Leptokurtosis didn't arise during pre-future and options except BPCL and Dr. Reddy during pre-future period. Jarque bera test also following the non normality distribution.

To test for serial correlation in the standardized residuals,  $\varepsilon_t/\alpha_t$ , Lagrange Multiplier (LM) test was applied. Lagrange Multiplier test is based on the auxiliary regression.

$$\varepsilon^2 = \alpha_0 + \sum \alpha_i \varepsilon_{t-i}^2 \quad ZZZ$$

Null hypothesis for Lagrange Multiplier is that, there are no auto-correlation up to lag  $p$ ,  $H_0 = \alpha_1 = \alpha_2 = \alpha_3 = \dots = \alpha_p = 0$ . The test statistic

**Table 2.** Test of stationarity with augmented Dickey Fuller test

	ADF Levelled				ADF Ist Difference			
	LAG Length	ADF	p-Value	t-Stat	LAG	ADF Length	p-Value Stat	t-Stat
Acc Ltd.	6	1.314	0.143	0.053	5	-13.344*	0.0003	10.32
BHEL	6	1.11023	0.45	0.135	5	-24.738*	0.000	31.47
BPCL	6	0.4111	0.519	0.623	5	-10.163*	0.000	41.29
Dr. Reddy's	6	0.548	0.555	0.954	5	-18.235*	0.0002	51.22
ITC	6	0.0314	0.831	0.416	5	-8.524*	0.000	28.14
M&M	6	1.632	0.1438	1.061	5	-12.217*	0.000	50.35
MTNL	6	0.5438	0.5431	1.05	5	-9.429*	0.000	34.27
Nifty	6	0.5871	0.4156	0.13	5	-17.257*	0.00	16.24

Notes: for t-Stat: at 1 % level; 5% level, at 10% level

\*based on the data taken from NSE's official website. For p value: at 1 % level is 0.01; 5% level 0.05, at 10% level is 0.1

LM=C\*R<sup>2</sup> has an asymptotic Chi-square distribution with *p* degrees of freedom, where C represents the sample size and R<sup>2</sup> is obtained from the auxiliary regression above. If any lag

is greater than zero then we can reject the null hypothesis and if the null hypothesis is accepted, there would be no auto-regressive effect in the error terms.

**Table 3.** Descriptive Stats

Company	Period (Count)	Mean	SD	Skew	Kurt	JB
Acc Ltd.	Whole Period (3380)	0.059868	2.797981	-0.22560	3.462268	58.7656
	Pre-Future (1035)	0.002437	3.655896	-0.11537	1.770459	67.49115
	Pre-Option (945)	-0.00423	3.705012	-0.13503	1.716671	67.7200
	F/Post (2345)	0.078249	2.319008	-0.32401	3.791828	102.2901
	O/Post ( 2435)	0.083482	2.354365	-0.27472	3.705417	232.57477
BHEL	Whole Period(3263)	0.048117	3.145254	-3.18989	70.09909	617653.6783
	Pre-Future (918)	-0.09616	3.766322	3.759254	0.798877	2347.5136
	Pre-Option (828)	-0.08774	3.801231	0.003959	0.720733	179.23166
	F/Post (2435)	0.112007	2.873645	-5750069	139.2642	
	O/Post ( 2435 )	0.099810	2.896598	-5.44556	129.9617	1647456.9591
BPCL	Whole Period(3265)	0.013801	3.273574	-2.77464	61.20718	465109.1183
	Pre-Future (920)	-0.09021	4.427962	-3.99854	62.43053	137841.4514
	Pre-Option (830)	-0.08801	4.567536	-4.02981	61.04608	118766.8484
	F/Post ( 2331)	0.049955	2.693726	0.093860	4.665001	272.67526
	O/Post ( 2435 )	0.048711	2.695790	0.067119	4.545270	244.09469
Dr. Reddy's	Whole Period(3277)	0.041033	3.136687	-6.74784	150.9812	3014921.1859
	Pre-Future (932)	-0.096715	4.193310	-4.79000	79.86693	233006.762
	Pre-Option (841)	-0.155037	3.593596	0.0816	0.607501	201.51409
	F/Post ( 2345)	0.024398	2.594715	-8.71973	235.2338	5299329.6907
	O/Post ( 2435)	0.000758	2.963504	-10.8407	254.0124	6440250.955
ITC	Whole Period (3426)	-0.04157	5.168433	-38.8682	1944.000	540334356.76
	Pre-Future (1081)	-0.01292	2.84748	-0.06935	1.636373	84.6206629
	Pre-Option (991)	-0.00028	2.859001	-0.03926	1.553666	86.631996
	F/Post (2096)	0.06116	6.277473	-35.7122	1470.877	188617618.52
	O/Post (2435 )	0.05864	5.854009	-37.645	1662.51	279986380.67
M&M	Whole Period(3329)	0.025756	3.457465	-4.53436	90.46089	1072437.9256
	Pre-Future (984)	-0.12404	3.704308	-0.15499	1.065632	157.35274
	Pre-Option (894)	-0.14633	3.743048	-0.15773	1.064633	143.23222
	F/Post (2345)	0.089423	3.347863	-6.99392	146.0361	2018147.0026
	O/Post (2455)	0.073162	3.345547	-6.69349	139.7528	1931323.4306
MTNL	Whole Period (3313)	-0.05340	2.986684	0.013990	2.686525	13.67292
	Pre-Future (968)	-0.06753	3.572681	0.100633	0.594964	249.6292
	Pre-Option (878)	-0.08502	3.669223	0.092416	0.473657	245.98210
	F/Post (2345)	-0.04695	2.709629	-0.06437	4.400108	193.15565
	O/Post (2435)	-0.04272	2.700040	-0.04621	4.340148	183.08405
Nifty	Whole Period (3254)	0.050817	1.729893	-0.22826	6.378880	1576.18936
	Pre-Future (553)	0.049420	1.989310	0.005025	1.674824	40.465548
	Pre-Option (799)	0.014019	1.934679	-0.12179	1.861705	45.1120298
	F/Post (2701)	0.051805	1.672258	-0.30672	8.044951	1177.887155
	O/Post (2455)	0.066989	1.668428	-0.29414	8.788343	3462.673

\*Based on the data taken from NSE's official website

Note: JB Test at 5% level of significance is 7.88



To confirm ARCH/GARCH effects in time series under study, the Lagrange Multiplier test (LM)/Ljung Box (LB) test were used. For that purpose Q-stats of auto-correlation up to six lags had been used, while only 1st lag of LM test had been taken. It was started with the residual term in the equation for the 6 lag using the model given in equation ZZZ.

### Interpretation of LM test for ARCH Effect

For that purpose the Lagrange Multiplier test had been applied for the confirmation of ARCH effect. The hypothesis developed by T. Mallikaarjunappa and Afsal E.M. (2008) of non-ARCH effect had been used in the time series against ARCH effect. The hypothesis was established as follows:

$H_0$ : coefficient at any lag = 0, (that time series do not shows any ARCH effect at any lag at given level of significance).

And,  $H_1$ : coefficient at any lag  $\neq 0$ : (that time series shows an ARCH effect at any lag at given level of significance).

The regression test explored that the coefficient of LM test for lag 1 were statically significant at 1%, level of significance. The arch effect on the basis of f test and  $\chi^2$  distribution at 6 lags was analysed.

In Nifty observed f-value exceeded the LM test statistic at first lag, the value of f (6, 3254) = 2.8020 (at 1% level of significance), as  $C \cdot R^2$  was  $3254 \cdot 0.6746 = 2195.2$  which did not follow the  $\chi^2(6) = 22.5$  at 1% level of significance. Therefore, the null hypothesis that all coefficients were zero was rejected, and concluded that, sufficient ARCH effect was present in Nifty on the closing price basis. In the similar way all companies shows the sufficient ARCH effect on the closing price basis.

### Interpretation of LB test for GARCH Effect

Basic statistics of return series were reported in Table 4, particularly the correlation coefficient up to six lags and Ljung Box stats. The hypothesis set for testing of Ljung Box analysis was as:

$H_0$ : time series do not show any interdependency at any lag.

$H_1$ : time series shows the interdependency at any lag.

The findings indicated that existence of high serial correlation coefficient. Also it was found that at first lag of index and all companies were confirming the GARCH effect at the 1% level of significance.

### ANALYSIS OF TABLES 5-8

#### VOLATILITY PERSISTENCY: ARCH/GARCH ANALYSIS

In order to study, the impact of introduction of future and option on the volatility of Indian capital market, GARCH model given in equation had been applied along with this the interest was to determine the changes in the pattern of volatility after introducing future and option. Also it was trying to show that, whether there was change in volatility (increase or decrease).

In order to isolate the impact of future and option (after introduction) and to remove market-wide influences on Nifty returns, a proxy that can be associated with any future and option contract had been used, and yet captures market-wide influences in India. For example, any news releases relating to economic conditions like, inflation rates, growth forecasts, IIP data, rate cuts, etc. were likely to affect the whole market. It was necessary to remove the effects of all these factors on price volatility. Since the Nifty Junior had been used as a proxy variable to capture market-wide information effects (Tables 5-8) and found that there was no predictable information from market-wide factors on the Nifty returns.

Any predictability associated in the time series with lagged world market returns and day-of-the-week effects was also removed. The lagged return on the Dow Jones index was used as a proxy for the world market return to remove any worldwide price movements on volatility in the Nifty return and found that there was no predictable information from world markets on the Nifty returns (coefficient on return of Dow Jones were not statically significant at 1%, 5%, 10% level of significance). Also we have introduced a *day-of-the-week* dummies for Monday to Friday (Tables 5-8).

**Table 4.** Confirmation of ARCH/GARCH Effect

LM	LB Q(1)	LB Q(2)	Intercept	$\gamma_1$	LB Q(3)	$\gamma_2$	LB Q(4)	$\gamma_3$	LB Q(5)	$\gamma_4$	LB Q(6)	$\gamma_5$	$\gamma_6$	R <sup>2</sup>	F	CR <sup>2</sup>
Acc Ltd. (3380)	Coefficient	-0.621*		-0.249*	-0.001	0.009	-0.031	0.058	-0.025	0.4193	36.11	1417.2				
	Std Error	0.17		(111.90)	(112.197)	(115.388)	(126.337)									
	t-stat	24.937		0.024	0.017	0.017	0.018									
	p-Value	0.000		7.601	0.056	0.025	0.536									
BHEL (3263)	Coefficient	-0.513*		0.003	0.335	0.749	0.589	0.021	-0.012	0.5833	29.34	1903.3				
	Std Error	0.029		(91.897)	(92.400)	(95.087)	(96.586)									
	t-stat	9.023		10.509	0.778	0.369	0.211									
	p-Value	0.000		0.000	0.339	0.664	0.659									
BPCL (3265)	Coefficient	-0.649*		-0.237*	-0.006	-0.040	-0.019	-0.019	-0.020	0.7104	53.19	2319.4				
	Std Error	0.044		(92.959)	(93.094)	(98.397)	(113.102)									
	t-stat	10.462		9.504	0.471	0.115	0.110									
	p-Value	0.000		0.000	0.601	0.743	0.664									
Dr. Reddy's (3277)	Coefficient	-0.873*		-0.187*	-0.037	0.008	0.020	0.020	-0.014	0.2679	77.24	877.9				
	Std Error	0.0013		(60.418)	(64.873)	(65.072)	(66.639)									
	t-stat	9.483		0.024	0.017	0.017	0.017									
	p-Value	0.000		3.951	0.854	0.986	0.441									
ITC (3426)	Coefficient	-0.226*		0.000	0.325	0.420	0.369	-0.014	0.005	0.8190	57.31	2805.9				
	Std Error	0.022		(110.029)	(114.909)	(115.863)	(117.822)									
	t-stat	9.088		0.024	0.017	0.017	0.017									
	p-Value	0.000		7.946	0.987	0.654	0.159									
M&M (3329)	Coefficient	-0.319*		0.000	0.649	0.436	0.604	-0.010	0.024	0.3179	52.10	1058.3				
	Std Error	0.022		(103.330)	(104.756)	(105.121)	(105.492)									
	t-stat	5.394		0.024	0.018	0.017	0.017									
	p-Value	0.000		10.652	0.842	0.951	0.746									



**Table 4.** Confirmation of ARCH/GARCH Effect (contd.)

LM	LB Q(1)	LB Q(2)	Intercept	$\gamma_1$	LB Q(3)	$\gamma_2$	LB Q(4)	$\gamma_3$	LB Q(5)	$\gamma_4$	LB Q(6)	$\gamma_5$	$\gamma_6$	R <sup>2</sup>	F	CR <sup>2</sup>
MTNL (3313)			-0.416*	-0.190*	(59.509)	-0.006	(60.205)	0.013	(60.324)	-0.006	(65.928)	0.039	0.001	0.7863	34.05	2605
	Coefficient												(65.932)			
	Std Error	0.022		0.025	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017			
	t-stat	3.222		4.946	0.225	0.225	0.316	0.316	0.316	0.996	0.805	0.805	0.590			
	P-Value	0.000		0.000	0.666	0.666	0.752	0.752	0.655	0.655	0.566	0.566	0.390			
Nifty (3254)			-0.416*	-0.269*	(129.710)	0.003	(130.409)	0.015	(130.473)	0.005	(130.532)	-0.004	-0.014	0.6746	62.05	2195.2
	Coefficient												(131.275)			
	Std Error	0.022		0.025	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.017			
	t-stat	7.69		5.239	0.945	0.945	0.222	0.222	0.119	0.119	0.741	0.741	0.541			
	P-Value	0.000		0.000	0.466	0.466	0.644	0.644	0.493	0.493	0.536	0.536	0.657			

Note: Auto-correlation coefficients with Q-Stats are reported in parentheses. #t-stat: \*1%=3.090; \*\*5%=2.576; \*\*\*10%=2.326## p value: at 1 % level is 0.01; 5% level is 0.05, at 10% level is 0.1

Table 5. Estimates of GARCH (1, 1) model with future dummy

	Mean Equation							Variance Equation					R <sup>2</sup>
	$\alpha_0$	$\alpha_1$	$\alpha_2$	$\alpha_3$	$\alpha_4$	$\alpha_5$	$\alpha_6$	$\alpha_7$	$\beta_0$	$\beta_1$	$\beta_2$	$\gamma_0$	
	Intercept	Return	Lagged return of Dow Jones	Mon	Tue	Wed	Thurs	Fri	ARCH0	ARCH1	GARCH1	Future/Option Dummy	
Acc Ltd.	-0.00117 (-2.434)	0.74539 (55.954)	0.002149 (9.744)	1.6834 (9.03)	0.1033 (6.86)	0.002139 (1.04)	0.12667 (6.75)	0.0021 (3.89)	0.0000190 (3.80)	0.07498 (7.03)	0.8422 (67.29)	-0.0000236 (-0.227)	0.4261
BHEL	-0.00115 (-2.05)	0.91234 (71.907)	0.008369 (10.164)	1.28 (8.10)	0.2157 (15.01)	-0.003 (-1.35)	0.15 (6.88)	0.00136 (2.59)	0.0000858 (4.07)	0.07361 (8.56)	0.7121 (83.96)	-0.0000108 (-1.27)	0.5963
BPCL	-0.00139 (-3.55)	1.13 (60.021)	0.007955 (5.99)	-1.36 (-8.69)	0.1658 (14.04)	0.005 (1.61)	0.22 (7.16)	0.00184 (3.41)	0.0000625 (3.82)	0.06923 (8.90)	0.7728 (99.33)	-0.0000354 (-3.71)	0.7107
Dr. Reddy's	-0.00139 (-2.98)	0.71 (62.114)	0.007019 (6.11)	1.41 (8.84)	0.1645 (14.25)	0.00525 (1.84)	-0.27 (-7.86)	0.00144 (2.61)	0.0000685 (4.89)	0.06559 (6.47)	0.6842 (86.45)	-0.0000340 (-0.347)	0.2923
IIC	-0.00118 (-2.69)	1.05315 (59.015)	0.008943 (3.01)	1.23895 (7.77)	0.1646 (13.48)	0.005006 (1.91)	0.14863 (6.19)	0.00153 (2.61)	0.0000384 (3.66)	0.06580 (8.49)	0.4591 (81.76)	0.000626 (8.079)	0.8205
M&M	-0.00141 (-3.22)	0.66326 (56.104)	0.004916 (1.54)	1.65463 (9.23)	0.1264 (8.14)	0.001233 (1.41)	0.13349 (6.16)	0.00114 (1.91)	0.0000628 (3.61)	0.07547 (9.88)	0.7216 (74.34)	-0.0000235 (-0.183)	0.3258
MTNL	-0.00134 (-2.99)	1.05994 (72.451)	0.006842 (3.47)	1.08614 (6.48)	0.1325 (9.45)	0.001098 (1.79)	0.16438 (7.98)	0.00188 (3.42)	0.0000655 (3.42)	0.08261 (7.31)	0.9001 (79.31)	-0.0000101 (-4.63)	0.8019
Nifty	-0.00119 (-2.88)	0.65888 (55.633)	0.001596 (8.14)	1.39467 (7.76)	0.1436 (8.32)	0.001982 (1.37)	0.19510 (6.14)	0.00261 (4.84)	0.0000566 (3.89)	0.05444 (8.99)	0.8259 (72.92)	-0.0000651 (0.153)	0.6952



Table 6. Estimates of GARCH (1, 1) model with option dummy

	Mean Equation										Variance Equation					R <sup>2</sup>
	$\alpha_0$	$\alpha_1$	$\alpha_2$	$\alpha_3$	$\alpha_4$	$\alpha_5$	$\alpha_6$	$\alpha_7$	$\beta_0$	$\beta_1$	$\beta_2$	$\gamma_0$				
	Intercept	Return	Lagged return of Dow Jones	Mon	Tue	Wed	Thurs	Fri	ARCH0	ARCH1	GARCH1	Future/Option Dummy				
Acc Ltd	-0.00114 (-2.391)	0.74582 (56.268)	0.002177 (9.798)	1.6896 (9.12)	0.1112 (6.94)	0.002101 (1.01)	0.12764 (6.68)	0.0043 (3.93)	0.0000198 (3.84)	0.07437 (7.01)	0.8487 (79.32)	-0.0000234 (-0.23)	0.4059			
BHEL	-0.00124 (-2.27)	0.9281 (71.709)	0.008367 (10.27)	1.2814 (8.36)	0.2179 (15.39)	-0.00373 (-1.37)	0.1297 (5.93)	0.00139 (2.61)	0.0000827 (3.84)	0.07261 (8.43)	0.7137 (84.17)	-0.000011 (-1.27)	0.5779			
BPCL	-0.00148 (-3.59)	1.2496 (59.824)	0.007974 (5.104)	-1.438 (-8.71)	0.1641 (14.01)	0.01251 (1.64)	0.3105 (7.19)	0.00197 (3.45)	0.0000640 (3.86)	0.06935 (8.95)	0.7710 (98.97)	-0.0000388 (-0.813)	0.7329			
Dr. Reddy's	-0.00151 (-2.102)	0.8264 (61.988)	0.007031 (6.17)	1.528 (8.89)	0.1637 (14.22)	0.00544 (1.819)	-0.1507 (-7.81)	0.00131 (2.57)	0.0000699 (4.92)	0.06574 (6.51)	0.6856 (86.99)	-0.0000353 (-0.429)	0.3049			
ITC	-0.00126 (-2.72)	1.05325 (59.399)	0.008959 (3.05)	1.23910 (7.80)	0.1659 (13.52)	0.005018 (1.94)	0.14878 (6.22)	0.00141 (2.58)	0.0000398 (3.69)	0.06571 (8.46)	0.4658 (80.81)	0.000631 (8.783)	0.8026			
M&M	-0.00158 (-3.26)	0.6637 (55.888)	0.004933 (1.58)	1.65474 (9.26)	0.1256 (8.10)	0.001245 (1.46)	0.13358 (6.20)	0.00129 (1.94)	0.0000612 (3.58)	0.07561 (9.92)	0.7225 (75.01)	-0.0000227 (-0.179)	0.3501			
MTNL	-0.00145 (-2.102)	1.05986 (72.182)	0.006856 (3.51)	1.08622 (6.51)	0.1341 (9.49)	0.001081 (1.74)	0.16446 (7.101)	0.00201 (3.47)	0.0000671 (3.48)	0.08274 (7.34)	0.9014 (79.36)	-0.0000093 (-0.163)	0.8264			
Nifty	-0.00132 (-2.92)	0.65895 (55.837)	0.001581 (8.10)	1.39452 (7.72)	0.1448 (8.36)	0.001970 (1.33)	0.19521 (6.17)	0.00272 (4.88)	0.0000584 (3.92)	0.05429 (8.94)	0.8241 (72.01)	-0.0000643 (-0.238)	0.7201			

Table 7. Estimates of GARCH (1, 1) before and after future introduction

	Mean Equation							Variance Equation					Chow Test				
	$\alpha_0$	$\alpha_1$	Return	$\alpha_2$	Lagged return of Dow Jones	$\alpha_3$	Mon	Tue	Wed	Thurs	Fri	$\alpha_7$		$\beta_0$	ARCH0	ARCH1	$\beta_2$
Acc Pre	0.00196 (3.14)	0.54285 (62.359)		0.005701 (5.321)	0.9802 (6.41)	0.0941 (5.74)	0.00256 (1.34)	0.1405 (7.01)	0.00169 (3.61)	0.000023 (4.01)	0.06132 (6.04)	0.5467 (44.78)	0.2259	12.507			
Acc Post	-0.00063 (-0.89)	0.38646 (39.589)		0.003964 (7.387)	1.4090 (0.865)	0.0874 (0.443)	0.00147 (0.188)	0.0829 (0.538)	0.00176 (0.387)	0.0000106 (2.15)	0.08941 (8.38)	0.004361 (0.169)	0.3197				
BHEL Pre	-0.00169 (-3.43)	0.21267 (49.362)		0.008164 (3.64)	0.2856 (4.583)	0.1482 (8.32)	0.00047 (1.13)	0.12136 (5.38)	0.0067 (3.46)	0.0000457 (3.84)	0.04138 (4.13)	0.6513 (73.16)	0.5743	30.211			
BHEL Post	-0.00081 (-1.69)	0.28812 (52.667)		0.003264 (9.64)	1.0218 (0.984)	0.0767 (0.654)	0.00172 (0.038)	0.0314 (0.471)	0.0058 (0.129)	0.0000706 (2.27)	0.05389 (5.58)	0.001392 (0.2639)	0.5818				
BPCL Pre	-0.00210 (-4.68)	1.0125 (57.052)		0.002549 (6.48)	0.1387 (5.0137)	0.1387 (7.62)	0.00159 (0.85)	0.03896 (4.35)	0.00138 (2.16)	0.0000183 (2.38)	0.03863 (4.51)	0.6318 (69.35)	0.7244	11.322			
BPCL Post	-0.00046 (-2.01)	1.0408 (59.288)		0.002476 (21.57)	0.9254 (0.4087)	0.1473 (0.841)	0.107 (0.107)	0.21698 (0.891)	0.00197 (0.297)	0.000273 (0.287)	0.04433 (0.567)	0.006094 (0.6738)	0.7316				
Dr. Reddy's Pre	-0.00168 (-3.24)	0.68 (53.058)		0.007821 (6.09)	0.593 (3.46)	0.1286 (12.19)	0.00348 (1.17)	0.3417 (8.41)	0.00071 (0.37)	0.0000543 (3.42)	0.05358 (4.79)	0.5231 (70.69)	0.2873	26.221			
Dr. Reddy's Post	-0.00131 (-2.69)	0.53156 (49.636)		0.002163 (4.12)	0.287 (0.286)	0.0574 (0.638)	0.00219 (0.109)	0.02430 (0.167)	0.000156 (0.229)	0.0000328 (1.53)	0.06134 (5.83)	0.004593 (0.2803)	0.3001				
ITC Pre	-0.00163 (-3.68)	0.92569 (64.819)		0.008431 (3.16)	0.7632 (5.09)	0.1325 (12.81)	0.00416 (1.41)	0.128 (5.18)	0.00158 (2.64)	0.0000126 (2.38)	0.05183 (7.63)	0.6724 (60.47)	0.8489	11.052			
ITC Post	-0.0008 (-0.26)	0.86140 (59.403)		0.007618 (4.36)	1.08581 (0.725)	0.1359 (1.168)	0.00229 (0.1068)	0.116 (0.476)	0.00143 (0.249)	0.0000295 (3.04)	0.06040 (8.18)	0.52740 (10.226)	0.8368				
M&M Pre	-0.168 (-4.67)	0.32918 (53.029)		0.007518 (7.13)	1.53647 (8.604)	0.1383 (8.73)	0.000748 (0.86)	0.07685 (4.47)	0.00056 (0.50)	0.0000601 (3.29)	0.0812 (4.67)	0.6488 (68.49)	0.3361	12.090			
M&M Post	-0.0001 (-1.63)	0.39401 (58.498)		0.001549 (7.53)	0.19438 (1.1505)	0.1156 (0.760)	0.001489 (0.173)	0.12343 (0.603)	0.00094 (0.128)	0.0000928 (4.32)	0.0015 (5.28)	0.000513 (0.0548)	0.3012				
MTNL Pre	-0.00163 (-2.54)	0.98265 (69.388)		0.004230 (3.71)	0.42084 (2.035)	0.1437 (10.03)	0.000691 (1.287)	0.10491 (5.45)	0.00136 (2.76)	0.0000509 (3.08)	0.04531 (7.44)	0.9356 (72.16)	0.8179	41.746			
MTNL Post	-0.00041 (-1.44)	0.14309 (42.941)		0.009351 (7.80)	0.77618 (0.516)	0.0426 (0.399)	0.000477 (0.063)	0.08680 (0.516)	0.00170 (0.303)	0.0000316 (2.01)	0.08013 (7.01)	0.003585 (0.4153)	0.8231				
Nifty Pre	-0.00136 (-3.11)	0.62151 (62.341)		0.008130 (6.59)	0.9418 (6.45)	0.1665 (10.93)	0.002259 (1.62)	0.1543 (4.97)	0.002272 (4.23)	0.0000494 (3.67)	0.02356 (4.40)	0.5862 (61.85)	0.7201	21.053			
Nifty Post	-0.00091 (-1.77)	0.60297 (48.061)		0.002426 (8.34)	1.0658 (0.697)	0.0948 (0.627)	0.001392 (0.117)	0.0654 (0.305)	0.000875 (0.386)	0.0000482 (3.49)	0.06580 (6.74)	0.004387 (0.3394)	0.6811				

Table 7. Estimates of GARCH (1, 1) before and after future introduction (contd.)

	Mean Equation							Variance Equation				R <sup>2</sup>	Chow Test
	$\alpha_0$	$\alpha_1$	$\alpha_2$	$\alpha_3$	$\alpha_4$	$\alpha_5$	$\alpha_6$	$\alpha_7$	$\beta_0$	$\beta_1$	$\beta_2$		
	Intercept	Return	Lagged return of Dow Jones	Mon	Tue	Wed	Thurs	Fri	Arch0	Arch1	Garch1		
Acc Pre	0.00196 (3.14)	0.54285 (62.359)	0.005701 (5.321)	0.9802 (6.41)	0.0941 (5.74)	0.00256 (1.34)	0.1405 (7.01)	0.00169 (3.61)	0.000023 (4.01)	0.06132 (6.04)	0.5467 (44.78)	0.2259	12.507
Acc Post	-0.00063 (-0.89)	0.38646 (39.589)	0.003964 (7.387)	1.4090 (0.865)	0.0874 (0.443)	0.00147 (0.188)	0.0829 (0.538)	0.00176 (0.387)	0.0000106 (2.15)	0.08941 (8.38)	0.004361 (0.169)	0.3197	30.211
BHEL Pre	-0.00169 (-3.43)	0.21267 (49.362)	0.008164 (3.64)	0.2856 (4.583)	0.1482 (8.32)	0.00047 (1.13)	0.12136 (5.38)	0.0067 (3.46)	0.0000457 (3.84)	0.04138 (4.13)	0.6513 (73.16)	0.5743	0.5818
BHEL Post	-0.00081 (-1.69)	0.28812 (52.667)	0.003264 (9.64)	1.0218 (0.984)	0.0767 (0.654)	0.00172 (0.038)	0.0314 (0.471)	0.0058 (0.129)	0.0000706 (2.27)	0.05389 (5.58)	0.001392 (0.2639)	0.7244	11.322
BPCL Pre	-0.00210 (-4.68)	1.0125 (57.052)	0.002549 (6.48)	0.1387 (5.0137)	0.1387 (7.62)	0.00159 (0.85)	0.03896 (4.35)	0.00138 (2.16)	0.0000183 (2.38)	0.03863 (4.51)	0.6318 (69.35)	0.7316	0.7316
BPCL Post	-0.00046 (-2.01)	1.0408 (59.288)	0.002476 (21.57)	0.9254 (0.4087)	0.1473 (8.41)	0.0107 (0.107)	0.0891 (0.891)	0.0297 (0.297)	0.000273 (0.287)	0.04433 (0.567)	0.06738 (0.6738)	0.2873	26.221
Dr. Reddy's Pre	-0.00168 (-3.24)	0.68 (53.058)	0.007821 (6.09)	0.593 (3.46)	0.1286 (12.19)	0.00348 (1.17)	0.3417 (8.41)	0.00071 (0.37)	0.0000543 (3.42)	0.05358 (4.79)	0.5231 (70.69)	0.3001	11.052
Dr. Reddy's Post	-0.00131 (-2.69)	0.53156 (49.636)	0.002163 (4.12)	0.287 (0.286)	0.0574 (0.638)	0.00219 (0.109)	0.02430 (0.167)	0.00158 (0.229)	0.0000328 (1.53)	0.06134 (5.83)	0.004593 (0.2803)	0.8489	0.8489
ITC Pre	-0.00163 (-3.68)	0.92569 (64.819)	0.008431 (3.16)	0.7632 (5.09)	0.1325 (12.81)	0.00416 (1.41)	0.128 (5.18)	0.00158 (2.64)	0.0000295 (3.04)	0.05183 (7.63)	0.6724 (10.226)	0.8368	12.090
ITC Post	-0.0008 (-0.26)	0.86140 (59.403)	0.007618 (4.36)	1.08581 (0.725)	0.1359 (1.168)	0.00229 (0.1068)	0.07685 (0.476)	0.00056 (0.249)	0.0000601 (3.29)	0.0812 (4.67)	0.6488 (68.49)	0.3361	0.3361
M&M Pre	-0.0001 (-1.63)	0.39401 (58.498)	0.001549 (7.53)	0.19438 (1.1505)	0.1156 (0.760)	0.001489 (0.173)	0.12343 (0.603)	0.00094 (0.128)	0.0000928 (4.32)	0.0015 (5.28)	0.000513 (0.0548)	0.8179	41.746
M&M Post	-0.00163 (-2.54)	0.98265 (69.388)	0.004230 (3.71)	0.42084 (2.035)	0.1437 (10.03)	0.000691 (1.287)	0.10491 (5.45)	0.00136 (2.76)	0.0000509 (3.08)	0.04531 (7.44)	0.9356 (72.16)	0.8231	0.8231
MTNL Pre	-0.00041 (-1.44)	0.14309 (42.941)	0.009351 (7.80)	0.77618 (0.516)	0.0426 (0.399)	0.000477 (0.063)	0.08680 (0.516)	0.00170 (0.303)	0.0000316 (2.01)	0.08013 (7.01)	0.003585 (0.4153)	0.7201	21.053
MTNL Post	-0.00136 (-3.11)	0.62151 (62.341)	0.008130 (6.59)	0.9418 (6.45)	0.1665 (10.93)	0.002259 (1.62)	0.1543 (4.97)	0.000494 (4.23)	0.0002272 (3.67)	0.02356 (4.40)	0.5862 (61.85)	0.6811	0.6811
Nifty Pre	-0.00091 (-1.77)	0.60297 (48.061)	0.002426 (8.34)	1.0658 (0.697)	0.0948 (0.627)	0.001392 (0.117)	0.0654 (0.305)	0.000875 (0.386)	0.0000482 (3.49)	0.06580 (6.74)	0.004387 (0.3394)	0.8231	0.8231



**Table 8.** Estimates of GARCH (1, 1) model before and after option introduction

	Mean Equation							Variance Equation					Chow Test
	$\alpha_0$	$\alpha_1$	$\alpha_2$	$\alpha_3$	$\alpha_4$	$\alpha_5$	$\alpha_6$	$\alpha_7$	$\beta_0$	$\beta_1$	$\beta_2$	$R^2$	
	Intercept	Return	Lagged return of Dow Jones	Mon	Tue	Wed	Thurs	Fri	ARCH0	ARCH1	GARCH1		
Acc Pre	0.00199 (3.19)	0.54281 (61.562)	0.005722 (5.328)	0.9809 (6.45)	0.0921 (5.71)	0.00251 (1.32)	0.1415 (7.09)	0.00174 (3.65)	0.000031 (4.03)	0.06141 (6.02)	0.5411 (43.22)	0.4375	12.507
Acc Post	-0.00058 (-0.86)	0.38640 (39.401)	0.003972 (7.391)	1.4098 (0.868)	0.0879 (0.445)	0.00155 (0.191)	0.0818 (0.533)	0.00188 (0.390)	0.0000111 (2.19)	0.08958 (8.42)	0.004369 (0.7051)	0.4429	
BHEL Pre	-0.00177 (-3.49)	0.21279 (3.248)	0.008178 (3.69)	0.2841 (4.580)	0.1495 (8.37)	0.00061 (1.19)	0.12144 (5.41)	0.0081 (3.49)	0.0000444 (3.81)	0.04151 (4.17)	0.6533 (73.99)	0.5701	30.211
BHEL Post	-0.00099 (-1.72)	0.28828 (7.682)	0.003279 (9.66)	1.0201 (0.979)	0.0777 (0.659)	0.00181 (0.041)	0.0326 (0.477)	0.0074 (0.133)	0.0000721 (2.29)	0.05394 (5.61)	0.001378 (0.2601)	0.6012	
BPCL Pre	-0.00224 (-4.73)	1.0111 (56.485)	0.002559 (6.52)	0.1369 (5.0132)	0.1398 (7.66)	0.00171 (0.89)	0.03879 (4.30)	0.00148 (2.18)	0.0000198 (2.43)	0.03871 (4.53)	0.6331 (69.39)	0.7308	11.322
BPCL Post	-0.00061 (-2.07)	1.0424 (59.893)	0.002492 (21.62)	0.9241 (0.4081)	0.1491 (0.846)	0.00039 (0.107)	0.21681 (0.887)	0.00171 (0.292)	0.000289 (0.291)	0.04450 (0.572)	0.006081 (0.6734)	0.7258	
Dr. Reddy's Pre	-0.00186 (-3.29)	0.76 (55.132)	0.007841 (6.14)	0.581 (3.42)	0.1272 (12.12)	0.00359 (1.21)	0.3435 (8.49)	0.00094 (0.41)	0.000556 (3.47)	0.05366 (4.82)	0.5211 (70.01)	0.3131	26.221
Dr. Reddy's Post	-0.00131 (-2.69)	0.53003 (48.363)	0.002163 (4.12)	0.287 (0.286)	0.0574 (0.638)	0.00219 (0.109)	0.02430 (0.167)	0.000156 (0.229)	0.0000328 (1.53)	0.06134 (5.83)	0.004593 (0.080)	0.2875	
ITC Pre	-0.00175 (3.70)	0.92551 (63.804)	0.008445 (3.19)	0.7646 (5.12)	0.1332 (12.84)	0.00422 (1.43)	0.136 (5.21)	0.00142 (2.61)	0.0000138 (2.35)	0.05194 (7.67)	0.6732 (60.50)	0.8437	11.052
ITC Post	-0.0014 (-0.29)	0.86156 (61.477)	0.007629 (4.40)	1.08594 (0.729)	0.1346 (1.164)	0.00238 (0.1071)	0.132 (0.479)	0.00156 (0.252)	0.0000312 (3.09)	0.06051 (8.22)	0.5275 (10.228)	0.8391	
M&M Pre	-0.176 (-4.69)	0.32929 (53.162)	0.007535 (7.17)	1.53659 (8.607)	0.1396 (8.78)	0.000759 (0.89)	0.07674 (4.42)	0.00075 (0.55)	0.0000619 (3.32)	0.0825 (4.70)	0.6470 (68.05)	0.3359	12.090
M&M Post	-0.0015 (-1.67)	0.39417 (55.351)	0.001558 (7.58)	0.19434 (1.1507)	0.1167 (0.764)	0.001497 (0.178)	0.12357 (0.608)	0.00108 (0.133)	0.0000939 (4.37)	0.0026 (5.33)	0.005145 (0.5489)	0.3410	
MTNL Pre	-0.00174 (-2.58)	0.98282 (71.341)	0.004243 (3.76)	0.42098 (2.038)	0.1448 (10.07)	0.000678 (1.281)	0.10502 (5.49)	0.00119 (2.72)	0.0000517 (3.11)	0.04546 (7.47)	0.9374 (72.20)	0.7918	41.746
MTNL Post	-0.00056 (-1.48)	0.14317 (42.957)	0.009338 (7.74)	0.77631 (0.521)	0.0436 (0.403)	0.000459 (0.060)	0.08694 (0.519)	0.00186 (0.308)	0.0000332 (2.05)	0.08027 (7.07)	0.003569 (0.4150)	0.8110	
Nifty Pre	-0.00149 (-3.14)	0.62161 (61.346)	0.008141 (6.62)	0.9426 (6.49)	0.1678 (10.97)	0.002274 (1.67)	0.1521 (4.93)	0.002262 (4.218)	0.0000479 (3.62)	0.02376 (4.44)	0.5849 (60.65)	0.6843	21.053
Nifty Post	-0.00084 (-1.75)	0.60282 (50.058)	0.002450 (8.39)	1.0666 (0.699)	0.0965 (0.630)	0.001384 (0.112)	0.0666 (0.309)	0.000888 (0.390)	0.0000496 (3.52)	0.06595 (6.78)	0.004371 (0.3272)	0.7028	

In order to examine the impact of the introduction of the futures and options contracts, a Dummy variable in the conditional variance equation was introduced. A significant positive coefficient would indicate and increase in volatility, a significant negative (positive) coefficient would indicate a decrease (increase) in volatility.

The results of the estimation for the impact of futures introduction were presented in Table 5.

The hypothesis, used by Shenbagaraman P. (2003) of ARCH/GARCH had taken.

The hypothesis is as follows:

$H_0: \beta_2=0$ , (that time series do not show any ARCH/GARCH effect at given level of significance)

and,  $H_1: \beta_2 \neq 0$ : (that time series shows the ARCH/GARCH effect at given level of significance).

### ARCH Effect

ARCH models assume that the variance of the current error term was related to the size of the previous period's error terms, giving rise to volatility clustering. The coefficients of the ARCH constant was statically significant at 1% level of significance (Tables 5-8) and were within the parametric restrictions, thus implying a greater impact of shocks (or news) on volatility, hence it can be concluded that a significant ARCH coefficient indicates a large shock on previous day leads to a large (conditional) variance on current day. ARCH coefficient was the "news" parameter that explains that recent news had a greater impact on price changes. Specifically, it relates to the impact of yesterday's news on today's volatility.

### GARCH Effect

In contrast,  $\hat{\alpha}_2$  reflects the impact of 'old news' that indicates that it picks the impact of prior news on yesterday's variance and as such indicated the level of persistence in the information effect on volatility. The coefficients of the GARCH constant was statically significant at 1% level of significance (Table 5-6) and were within the parametric restrictions. The results of GARCH model would be interpreted as if the coefficient of the

GARCH variable was statically significant then it can be concluded that, old news had no impact on today's spot price changes and on the volatility.

Table 5 and 6 presents the result of the model with a Future and Options dummy. The Dummy Future/Option was taken as zero before the introduction of Future/Option contracts in the particular scrip/index and one after the introduction of future/option contract on particular scrip/index. The introduction of future and options had no effect on spot market volatility.

We tried to explore whether the nature of the GARCH process was altered or not because of future and option introduction. Hence the GARCH model was estimated separately for the pre-futures and the post-futures period. Table 7 and 8 presents the result of this estimation.

### Chow Test for Parameter Stability

In order to check for parameter stability in the regression models for pre-futures and post-futures and assuming constant error variance, a Chow test for structural change was conducted. In this test, a comparison was made between the regression coefficients of the pre-futures and post-futures models under the null hypothesis that both model coefficients were statistically the same. The Chow test statistically followed the F distribution with degrees of freedom  $(k, n_1 + n_2 - 2k)$ , where  $k$  was the number of parameters and  $n_1$  and  $n_2$  were the number of observations in the pre-futures and post-futures regression models, respectively. The null hypothesis of parameter stability (i.e., no structural change) could not be rejected if the computed F value in an application did not exceed the critical F value given d.f.  $(k, n_1 + n_2 - 2k)$  at the chosen level of significance. If the computed F value rejects the hypothesis of parameter stability then it can be suggested that the regression coefficients were statistically different before and after futures introduction, and it can be said that there was change in the pattern of the volatility. The hypotheses set for Chow test were as follows:

$H_0$ : The time series do not show any structural changes in the pattern of volatility at given level of significance.



And,  $H_1$ : The time series shows the structural changes in the pattern of volatility at given level of significance.

## INTERPRETATION

### Destabilization Effect

A dummy variable was introduced into the conditional variance equation, and found that the coefficient on the futures/option dummy  $\gamma_0$ , for the CNX Nifty which equals to  $-0.0000651$  with a t-stat of  $0.153$  for future dummy (Table 5) and  $-0.0000643$  with a t-stat of  $-0.238$  for option dummy (Table 6), which were not statically significantly, different from zero, indicating that there was no impact on volatility, while confirming the GARCH effect and suggesting that the introduction of derivative contracts did not appear to have any destabilization impact on spot market volatility. Similar results were found in all stocks.

### Week Day Effect

This appears to be statically significant (at 1% level of significance) day-of-the-week effects as given by the coefficients on the dummies for every day except Wednesday (Table 5 and 6) in all stocks and in CNX Nifty. During pre-future/option period, week day effect was present every day (at 1% level of significance) except Wednesday while during post introduction period there was no week day effect (Table 7 and 8).

### Persistency Analysis

The sum of the coefficients of ARCH and GARCH approaching unity, indicating a large degree of persistence in all stocks and Nifty, hence it can be concluded that bigger shocks had been decayed with time in CNX S&P Nifty and other stock.

### FnO Effect

After the analysis of Table 7 and 8, it was found that GARCH coefficient accept the null hypothesis ( $\hat{\alpha}_2 = 0$ ) during post-future/option period, hence it can be concluded that there was no effect of future and option on the spot market volatility in our sample.

## Chow Test

If computed F value exceeded the value of 2.64, and then the hypothesis of parameter stability can be rejected. This suggests that the regression coefficients were statistically different before and after futures listing and it can be concluded that there was change in the volatility pattern, after the introduction of future and option. Similar results were found in all stocks.

## CONCLUSION

We have studied the behaviour of volatility of stock market after introduction of future by using GARCH (1, 1) model. We have considered S&P CNX Nifty and 7 individual stocks of which all are derivative stocks. The results suggest that the introduction of derivatives does not have any stabilizing (or destabilizing) effect in terms of decreasing (or increasing) volatility

In case of index future, the volatility in the S&P CNX Nifty has declined after the introduction of S&P CNX Nifty future but the magnitude of dummy variable is very low which shows decline in volatility is very low. In case of 6 individual stocks, it shows a decrease in volatility but there is 1 stock which is ITC shows increase in the volatility. There is, thus, mixed results regarding the impact of introduction of future on the underlying spot market volatility. Nifty shows changing patterns of volatility. The day-of-the-week effects has been dissipated after futures introduction.

The model was estimated separately for the pre and post-futures period and find that the nature of the GARCH process has changed after the introduction of the futures trading. Pre-futures, the effect of information was long lasting, i.e. a shock to today's volatility due to some information that arrived in the market today, has an effect on tomorrow's volatility and the volatility for days to come. After futures contracts started trading the persistence has disappeared. Thus any shock to volatility today has no effect on tomorrow's volatility or on volatility in the future. This indicates that increasing market efficiency, since all information is incorporated into prices immediately.



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# Identifying and Ranking Factors of Customer Experience and Its Role in Shaping Customer Satisfaction

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## Abstract

*This article adopts the customer experience framework to find out how customer experience shapes customer satisfaction in the retail banking services. An empirical model using ISM technology is developed to identify and rank the factors of customer experience and to find the relationships and interrelationships of these factors which further shapes customer satisfaction. The results suggest that customer experience is driven by fourteen factors: convenience, customer interaction, servicescape, employees attitude, online functional elements, presence of other customers, online hedonic elements, customization, core service, value addition, speed, marketing mix, service process and online aesthetics. In addition, the findings suggest that these factors directly or indirectly lead to customer satisfaction which further helps in building customer trust and customer loyalty. The article ends with a discussion of the managerial implications and future research directions.*

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**Keywords:** *Customer experience, customer satisfaction, loyalty, retail bank services.*

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## INTRODUCTION

There is a growing evidence to suggest that firms are compelled to enhance existing offerings and provide better ones to meet customers' affinity for a real experience (Creamer, 2007; Mascarenhas *et al.*, 2006; Thompson and Arsel, 2004). Meanwhile, academic scholars are looking for a better understanding of the role of customer experience in the service encounter (Berry *et al.*, 2002a; Harris *et al.*, 2000; Sundbo and Darmer, 2008). For example, a recent request from Baron and Harris (2008) indicates a great need to

advance service science in regard to how customer experience is created. Sundbo and Darmer (2008) contend that experience is created by the service providers and call for a thorough understanding of the experience development process. Researchers in recent years have begun to pay more attention to the effect of customer experience on consumer behaviours. For example, Crosby and Johnson (2007) reveal that emotional motives outweigh rational motives (i.e., functional appeals) in affecting customers' loyalty behaviours by a ratio of five to three.

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In the changing scenario from product-centric to customer-centric approaches, the focus of marketers has shifted towards their customers and more deliberately on their experiences. Therefore, the attitudinal affect of customer experience on their postpurchase behaviour is a matter of research for both the academicians and marketers alike. But along with positive customer experience, the company also has to look for customer satisfaction with the product or service in order to build the requisite brand equity in the consumers' mind. Therefore, they emphasized that the procedures that generate positive customer experience lead to customer satisfaction.

## THE CUSTOMER EXPERIENCE

The customer experience does not merely include the quality of customer care, but also covers customer interaction with the elements of marketing mix such as the popularly known four Ps and Cs in the marketing discipline. A customer experiences all aspects of the products and services offered by the company. The customer experience leads to customer satisfaction, which in turn acts as an antecedent of brand loyalty, customer retention, market growth and the overall profitability of the organization. According to Meyer and Schwager, the relationship between customer satisfaction and experience may be equated as:

*Customer Satisfaction = (Good experiences of the customer - Bad experiences of the customer)*

Scholars have conceptualized customer experience in different ways such as the creation of memorable events (Pine and Gilmore), as a series of clues (Berry *et al.*), and as the generation of touchpoints and customer corridor (Meyer and Schwager). Although there is multiplicity in the definitions of 'Customer Experience', we find that none of them is really able to cover its essence holistically.

However, a common thread that runs through all of them is 'managing touchpoints'. But what is easily said may be difficult to accomplish, because there may be thousands of touchpoints that may need to be managed and that depend on several factors such as product-

service mix, target segment, positioning, competition, price, channels of distributions, packaging, frontline employees, marketing, branding strategy and many more. The list is endless, as it is very difficult to articulate all of them completely. Therefore, in this article, among all the proposed definitions, we are illustrating the most conceptual definition recently projected by Gentile *et al.*, that is, The Customer Experience originates from a set of interactions between a customer and a product, a company, or part of its organization, which provoke a reaction.

This experience is strictly personal and implies the customer's involvement at different levels (rational, emotional, sensorial physical and spiritual). Its evaluation depends on the comparison between a customer's expectations and the stimuli coming from the interaction with the company and its offering in correspondence of the different moments of contact or touch-points.

## THEORETICAL BACKGROUND

The traditional product-oriented marketing approach has begun to shift to a service focus through value creation (Vargo, 2008; Vargo and Lusch, 2004, 2008). Rust and colleagues (Lemon *et al.*, 2001; Rust *et al.*, 2004) define value equity as "the customer's objective assessment of the utility of a brand, based on perceptions of what is given up for what is received". It is driven by quality, price, and convenience. However, service experience goes beyond the traditional view of value proposition, as customers are seeking not only functional offerings from the provider but also emotional benefits: "a mix of excitement, entertainment and adventure that ensure [a real total customer experience]" (Mascarenhas *et al.*, 2006). Disneyland and the Venetian casino are just some examples that successfully integrate a mix of hedonic services into lavish entertainment complexes (Fowler, 2007; Pine and Gilmore, 2007). In fact, Disney, for example, places customer experience at the heart of its business philosophy (Carson, 2004; Pine and Gilmore, 1998).

In creating service experience, Crosby and Johnson (2007) suggest that customers' experience should be embedded in every touch-point throughout the service delivery process.

Mascarenhas, *et al.*, (2006) total customer experience typology suggests that experience must have the right blend of emotional attributes (e.g., excitement; colour, texture, and material; and customer-employee interaction) and functional attributes including physical (e.g., the service product, the setting, and service availability) and value ingredients (e.g., the right product and location) in the creation process (cf. Berry *et al.*, 2002a; Chang and Horng, 2010; Terblanche, 2009). These two categories of customer experience attributes should also be embedded throughout the service encounter in order to achieve sustainable customer loyalty. Patrício *et al.*, (2011) also contend that firms should integrate their service offerings, such as the service environment and employee service delivery, as a whole "that enables customers to create their service experiences" (Patrício *et al.*, 2011, p. 182).

## METHODS

With the growing literature on customer experience, several conceptual and empirical models for achieving the desired customer experience have been presented. However, there is a lack of such a model which highlights the structural relationships among the various factors of customer experience. Therefore, the existing models cannot always support managers in creating the desired customer experience (Verhoef *et al.*, 2009; Gentile *et al.*, 2007).

## OBJECTIVES

To resolve these issues, an Interpretative Structural Modelling (ISM) approach has been

utilized. It develops an integrated structural framework (Duperrin and Godet, 1973) which structures the mutual relationships among the factors of customer experience and also identifies the impact of these factors on customer's satisfaction. By applying this technique, an attempt has been made to fill the gaps highlighted by Walls *et al.*, (2010); Walter *et al.*, (2010); Gentile *et al.*, (2007) and Constatinides, (2004). For such purpose, the present study aims:

- To identify and rank the factors of customer experience and to study their influence on customer satisfaction.
- To find out the interaction among these identified factors and their relationship with outcome variable (Customer satisfaction) using ISM.
- To discuss the managerial implications of this investigation.

To achieve the above mentioned objectives, this study is organized in the following manner. First, critical factors of customer experience, customer experience in itself and customer satisfaction are discussed. Secondly, ISM methodology is introduced, followed by the development of the ISM model. Finally, the discussion and conclusions of this study are presented.

ISM is a methodology which helps the individuals to resolve the complex issues into the structured format. According to sage (1977), with the help of ISM process the ambiguous and inadequately articulated mental models, used to serve different purposes. It helps to identify the influence of different variables on each other and imposes the order and direction on the complex

**Table 1.** Applications of ISM

Contributor(s)	Area in which ISM has been applied
Saxena and Vrat, (1990)	Energy conservation in cement industry
Mandal and Deshmukh, (1994)	Selection of vendor
Sharma <i>et al.</i> , (1995)	Waste management in India
Ravi <i>et al.</i> , (2005)	Improvement of productivity in reverse logistics
Faisal <i>et al.</i> , (2006)	Risk mitigation in supply chain
Qureshi <i>et al.</i> , (2007)	Modelling the logistics outsourcing relationships
Raj <i>et al.</i> , (2008)	Flexible manufacturing system in India
Qureshi <i>et al.</i> , (2008)	Selection process of third party logistics
Kannan <i>et al.</i> , (2010)	Supplier development criteria in an automobile industry



relationship among variables of a system. The methodology of ISM is based on the interactive learning process. In this interpretive methodology, the judgment group decides the relationship among various variables and through this relationship, an overall structure of the complex variables is extracted. The modelling of this overall structure along with the specific interconnection among various variables is portrayed in a directed graph model.

### Development of model using ISM

In this study, ISM has been applied to highlight the interrelationships among the factors of customer experience and their influence on the customer satisfaction. The development of the ISM model commenced along with the literature review on customer experience. By reviewing the existing body of literature, the factors of customer experience were enlisted. Through the Expert Opinion Technique (brainstorming, normal group, etc.) a contextual relationship among the variables has been established. In the panel of experts who participated in the brainstorming sessions, there were in total 20 experts comprising seven well informed and advanced customers, three academicians possessing expertise in the field of customer experience and ten industry experts—two each from the tourism, healthcare, hospitality, banking and retail service sectors. Industry

experts were considered to be those people who had a work experience of more than 10 years in their respective field and had been responsible for delivering customer experience.

Three brain storming sessions were conducted for this study. In the first brainstorming session, initially the research outline and its significance of the objective was introduced, later on, the pertaining literature was given to all the participants in order to identify the factors of customer experience. In the second session, which was conducted after 12 days, a total no. of 14 factors of customer experience were identified. These 14 factors were likely to evaluate the customer experience; therefore, a variable customer experience in itself was added along with these factors. To identify the impact of these factors on the customer, an outcome variable i.e. customer satisfaction, was also considered in the study. In the final brainstorming session, the ranking of all the factors and their interrelationships with each other along with their influence on customer satisfaction was carried out. To achieve the concrete results, further relationships were reconfirmed by the panel of external experts. These experts were from different service sectors as tourism, banking, retail, healthcare and hospitality. The outcome of the final brain storming sessions has been verified through the external group of experts.

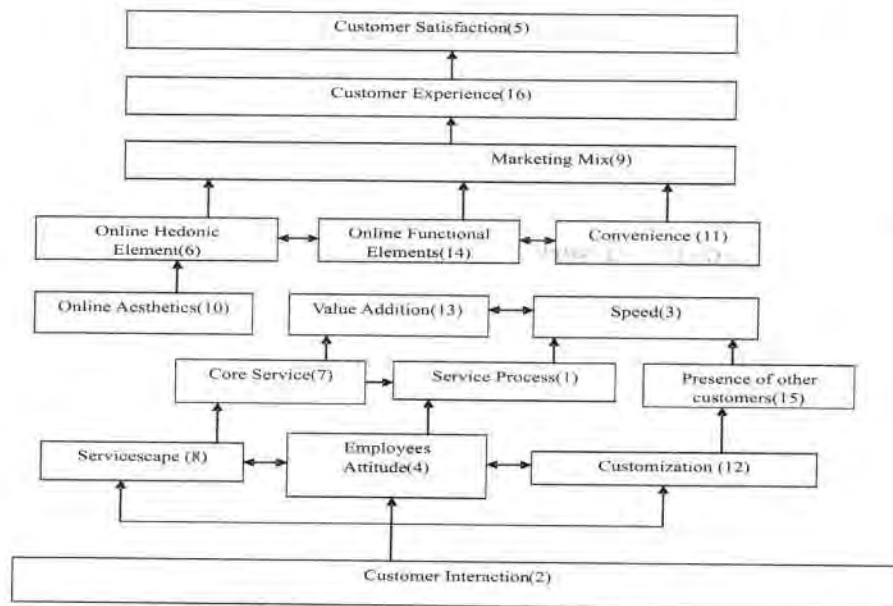


Fig. 1. Conceptual Model of customer experience using ISM technology



## RESULTS AND DISCUSSION

To apply the concept of customer experience alone in practice, an apparent knowledge of the key ingredients which constructs 'customer experience' is essentially required, on the basis of which a comprehensive framework can be developed. This framework will help the banking organizations to compare the expected and delivered experiences of the customers. By surpassing the difference which may occur through this comparison, the organizations will be able to satisfy their customers, which ultimately leads to customer loyalty, customer retention, positive word of mouth, market share, growth and profitability.

It is evident that customer interaction was highly significant factor for the creation of customer experience and therefore, it acts as a base for the hierarchy model of ISM. Customer satisfaction was the resultant outcome variable, which could be attained through the enhanced and improved customer experience. Therefore, this variable has been positioned at top in the ISM hierarchy model. In any organization, a customer interacts with every touchpoint of the organization, as its employees' attitude), servicescape, product/service delivered and with the other customers present in the organization (Gentile *et al.*, 2007; Berry and Carbone, 2007).

Among all the touchpoints of the customers, the employees have a great impact on the other aspects of the organization such as core service, service process and online environment of the organization. They also mutually influence the servicescape and customization, where servicescape leads to online aesthetics and customization affects the service process. The customer plays a vital role in prioritizing its requirement regarding the customized product or service. Nevertheless, since the employees are the ones who deliver the customized service, their way of delivery affects the process of the organization a lot (Addis and Holbrook, 2001).

The customers of any organization are always delighted with the value addition they receive along the necessary services. The value addition strongly depends on the core service of the organization; therefore, it varies from service to service. The speedy service process is a type

of value addition to the customers but addition of extra services may many times induce delay. This reveals that the value addition and speed mutually impact each other. Along with value addition, the speed also gets influenced by the service delivery process and density of customer's presence. The slow service process and a large number of customers induce delay, which in turn affects the overall convenience of the system.

Convenience has a strong mutual interrelationship with the online environment as comfortable and adjustable website procedures and good navigation capabilities of the user heavily impact each other. This enhances the emotional attachment of the customer with the organization. The customer wants the convenience at its every touchpoint which leads the marketing mix of the organization should be designed in such a manner that it enables to fulfil the goals of the customers and enhances their experience. The positive or enhanced customer experience always leads to customer satisfaction.

### Factors of Customer experience

#### 1. Convenience has a positive impact on customer satisfaction

##### *Convenience*

It acts as one of the main constituents in building the experiences of customers. This is because the customer wants an ease at its every single contact point with the organization. Along with the entire service process, the customer desires convenience at 'every contact-point' i.e. from its pre-purchase to post-consumption experiences (Rowley, 1994; 1999; Constantinides, 2004; Arnould *et al.*, 2005; Knutson, 2007; Mahfouz *et al.*, 2008; Jain and Bagdare, 2009).

Convenience is an integral part of customer experience. The customer wants convenience in every aspect of its transaction either online or offline. It may be in the form of speedy check-outs, technology-enabled billing, maintenance of hygiene and cleanliness, availability of parking, location and accessibility of the store, and many more (Jain and Bagdare, 2009; Rowley, 1994; 1999). But among all, the selection of location mainly affects the convenience because it is the



foremost step in the creation of customer experience. The decision on location has major implications on the price, promotion and merchandising also (Grewal *et al.*, 2009).

## **2. Customer interaction has a positive impact on customer satisfaction.**

### *Customer Interaction*

An interface which exists between an organization and a customer is recognized as customer interaction. In any organization, a customer interacts with its different parts as with its servicescape, with its products/services, with its other customers or alike (Gentile *et al.*, 2007). (Newton, 2006). In any organization, employees are the basic source of service delivery to the customers. In such case, they ought to be friendly, helpful, time committed, competent and capable of sustaining interpersonal distance (Sarcl and Marmorstein, 1999; Sun, 2002; O'Cass and Grace, 2004; Singh, 2000; Wright *et al.*, 2007; Butcher, 2002).

Customer experience is generated due to the customer's interaction with the company, product or other parts of the organization (Gentile *et al.*, 2007; Ansart and Duymedjian, 2006). These interactions affect customer satisfaction (Slatten *et al.*, 2009) because it is linked with the customer's emotion (Arnould and Price, 1993). Employees play a vital role and act as a critical asset in the interactive service delivery (Slatten *et al.*, 2009). In context of online environment interaction among customers can be made possible through the blogs, chat rooms, forums, and by posting the reviews of customers on company's websites. Nowadays the customer interaction with the brand is also increasing, illustrating the strong relationship between brand and customer experience (Verhoef *et al.*, 2009).

An interface which exists between an organization and a customer is recognized as customer interaction. In any organization, a customer interacts with its different parts as with its servicescape, with its products/services, with its other customers or alike (Gentile *et al.*, 2007). According to Arnould and Price, (1993), the interaction of the customer is strongly associated with the emotions of the customer and leads towards customer's satisfaction (Tsai, 2005;

Nagasawa, 2008; Adelman, and Zajonc, 1989; Sheu *et al.*, 2009; Bagozzi *et al.*, 1999; Richins, 1983: 1997; Allen *et al.*, 1992; Ladhan, 2007).

## **3. Servicescape has a positive impact on customer satisfaction.**

### *Servicescape*

It is the physical environment being shared by the employees and customers of any organization which plays a vital role in building the experiences of a customer. The customer compares the dimensions of physical environment (space, function and signs, ambient conditions and symbols and artefacts) with the quality of service he/she will receive from the organization (Bitner, 1992; 1990; Zhang *et al.*, 2009; Gilmore and Pine, 2002a, b; Grace and O'Cass, 2004; Wakefield and Blodgett, 1994; Panzarclla, 1980).

These are the physical surroundings which internally force the customer to stay in the environment and enhance the willingness of the employees to work (Lee and Vichet, 2008; Bitner, 1992). The physical environment embraces the sensory appeals (colour and aroma), spatial layout and furnishings of the organization (Zhang *et al.*, 2008). An entertaining, interactive, stimulating and educational buying environment (Knutson *et al.*, 2007) influences the online/offline behaviour of the customer which affects their cognitive, emotional and physiological responses (Walter *et al.*, 2010; Heide and Gronhaug, 2006; Constantinides, 2004; Bitner, 1992).

## **4. Attitude of employees has a positive impact on customer satisfaction.**

### *Employees' Attitude*

Employees play a vital role in the generation of customer experience. In the chain of employees, the front-line employees serve the customers and create positive long-lasting memory in the customers' mind (Nowak and Newton, 2006). In any organization, despite technical support on service delivery process; carelessness, slow service delivery, and poor attitude of the employees significantly affect customer satisfaction (Gronroos, 1990). The physical appearance of the employees and their way of delivering the core service immensely affects the



customer experience (O'Cass and Grace, 2004). According to O'Cass and Grace, 2004 in any organization, the core service and employee services are intertwined. Therefore, the experience generated from the core service is basically the services delivered by the employees to the customers.

The role of an employee is critical, especially in service organizations. As it is the employee who directly comes in contact with the customer, hence employee behaviour and capability contributes a lot in building the customer experience (Nowa).

**5. Online functional elements have a positive impact on customer satisfaction.**

*Online Functional Elements*

The sub-factors which come under this category are skill, control, interactivity and involvement. While navigation *Skill* is the self-assessment capability of an online-user. *Control* is the capability of an online user to successfully work in an online environment and the responses expected by the user for its inputs from the website. *Interactivity* is the promptness of website perceived by the web-user. *Involvement* reveals the significance of the website in the web-user's life (Novak *et al.*, 2000; Bridges and Florsheim, 2008; Csikszentmihalyi, 1990).

Today all the organizations possess websites through which the company communicates and serves its customers. Still there are certain functional elements which affect the online experience. These elements are: skill, control, interactivity and involvement (Bridges and Florsheim, 2008). These functional elements are highly promoted by the convenience which the websites provide through the fast browsing facility and adjustable procedures (Constantinides, 2004).

**6. The presence of other customers has a positive impact on customer satisfaction.**

*Presence of Other Customers*

The experiences of the customers are highly affected by the presence of other customers especially with their behaviours and gestures while having any interaction with them. The presence of others creates social surroundings

for the customers, which in turn influence their behaviour (Grove and Fisk, 1997). In service settings, density and perceived crowding impacts the process speed and emotional responses of the customer (Hui and Bateson, 1991).

The perception related to the presence of other customers differs from industry to industry. The opinion of any individual regarding the presence of other customers significantly depends upon the services he/she is availing. As in case of theatres, picnic spots, restaurants or alike, the presence of other customers is perceived as a social surrounding to any individual whereas in service settings where long queues exist (reservation counters, banks, etc.), the presence of others seems to be a crowd for an individual (Grove and Fisk, 1997; Arnold *et al.*, 2005; Nagasawa, 2008; Vcrhocf *et al.*, 2009; Walter *et al.*, 2010; Baron *et al.*, 1996; Martin. 1996; Martin and Pranter, 1989).

**7. Online hedonic elements have a positive impact on customer satisfaction.**

*Online Hedonic Elements*

The online sub-factors which lie under this category are arousal, challenge, telepresence, time distortion and trust. *Arousal* refers to as the estimation of stimulation. *Challenge* refers to as the sense of extending the capabilities of a web-user up to his/her limits. *Telepresence* is when a web-user perceives that the online environment is more dominant in comparison to the real environment. *Time distortion* refers to the time perception, when during navigation the web-user is so deeply engrossed in the virtual environment that he/she becomes unaware of the passage of time. *Trust* refers to as the feeling of safety and security, a web-user essentially requires of the online environment (Novak *et al.*, 2000; Constantinides, 2004; Bridges and Florsheim, 2008; Csikszentmihalyi and LeFevre, 1989; Boyerand Hult, 2006).

The online hedonic elements escape the web user from the real life. These elements are arousal, challenge, telepresence, time distortion (Bridges and Florsheim, 2008) and trust (Constantinides, 2004). The online functional and hedonic elements are not isolated but are just the parts



of the online interface which simultaneously addresses the diverse needs and convenience of the web users (Constantinides, 2004).

**8. Customization has a positive impact on customer satisfaction.**

*Customization*

It is an extent up to which the services are customized for a particular customer. In the present scenario, organizations are deliberately exerting themselves to deliver the customized services aiming to fulfil specific needs of the customers. Therefore, customization is the degree up to which the organization can tailor its products/services according to customer's requirement.

In terms of economic attribution, customized services act as a key offering in any organization (Pine and Gilmore, 1998). In customization, employees provide customized services to the customer; they deliver a feeling of 'importance' to the customer that ultimately enhances their experiences (Addis and Holbrook, 2001). Yet many times, especially during the peak rush hours customizing one customer may become one of the reasons of negligence for many other customers.

**9. Core service has a positive impact on customer satisfaction.**

*Core Service*

It is the fundamental service due to which an organization positions itself in the market. The idealistic core service is that which has the capability to attract the new customers by its need-meeting characteristics, strengthen the business of the organization through its multiple parts, quality and long-lasting nature, and also act as a baseline for the selling of supplementary services over time (Berry *et al.*, 2002; O'Cass and Grace, 2004; Walter *et al.*, 2010; Jain and Bagdare, 2009; Christopher, 1996; Reynolds and Bcatty, 1999; Jones *et al.*, 2000).

"In terms of core service, the relative degree and intensity of activities and interactions to waiting periods during the service delivery may impact evaluations and affect service quality evaluations significantly. Also the duration *per se* has an influence on rating outcomes" (Danaher and Mattson, 1998). In many service contexts,

core service delivery depends on the employees of the organization. This significantly affects the satisfaction, aroused feelings and attitudes of the customers (O'Cass and Grace, 2004).

**10. Value addition has a positive impact on customer satisfaction.**

*Value Addition*

These are the complementary services which an organization delivers in addition to the core service. These additional supplementary services create a highly positive and distinguished type of customer experience (Jain and Bagdare, 2009). The description of value addition varies from service to service. It is highly associated with the core service delivered by the organization which creates an exclusive and unforgettable feeling in the minds of the customers (Rowley, 1994; 1999; Lovelock, 1996; Schmilt, 1999; Berry *et al.*, 2002; Lexhagen, 2005).

The value addition in services delights the customers. The definition of value addition changes from service to service, it basically depends on the core service provided (Rowley, 1994; 1999). There are different value additions but the basic one is value addition in economic terms (Knutson *et al.*, 2007). The other types of value added services are alteration facility, more talk-time, food or snacks bar, free home delivery, etc. This little addition in the delivery of service contributes to the higher degree of customer satisfaction (Jain and Bagdare, 2009).

**11. Speed has a positive impact on customer satisfaction.**

*Speed*

It is the promptness, which any organization shows while fulfilling the requirements of its customers (Rowley, 1994; 1999). It basically highlights the time elapsed in completion of the entire service process. The slow delivery of the services creates a dissatisfaction in the minds of the customers, which ultimately affects the word-of-mouth and re-purchases intention of the customers (Sarcl and Marmorstein, 1999; Grove and Fisk, 1997; Berry *et al.*, 2002; Flanagan *et al.*, 2005; Jain and Bagdare, 2009; Caballero *et al.*, 1985; Katz *et al.*, 1991).



Speed emphasizes the time taken in the service process. Time reduction is done through effective channels. These channels may be telephonic/ personal visit/ computer network or others (Rowley, 1994; 1999). The slow service delivery system affects the speed, delays the process and produces waiting lines (Shankar *et al.*, 2006). While waiting, customer experience gets highly influenced by the actions of other people. The extension in waiting lines can create dissatisfying physical behaviours and inconvenience to the customer (Grove and Fisk, 1997; Shankar *et al.*, 2007). These longer delays also have a great impact on the customer satisfaction and their repurchase intentions (Taylor, 1994; Clemmer and Schneider, 1989).

**12. Marketing-Mix has a positive impact on customer satisfaction.**

*Marketing-mix*

In any organization, marketing-mix strategies are formulated with the aim to fulfil the expectations of the customers (Yclkur, 2000). The marketing-mix strategies of all P's are planned in such a manner that they can accomplish the requirements of their customers up to a great extent. It is a salient tool, which significantly affects the buying behaviour of both the online and the offline customers (Tsai, 2005; Constantinides, 2004; 2010; McCole, 2004; Ashill *et al.*, 2003).

Marketing-mix has been considered as the major controllable tool which influences the buying behaviour of both the online and the offline customers (Constantinides, 2004). In any organization, all the 7P's of the marketing-mix depend upon the goals of the customers. These goals are the expectations of customers from any organization. They may be recreation, social interaction, entertainment, intellectual stimulation or alike (Arnould and Price, 1993). The fulfillment of these goals appears in the form of positive customer experience which delights the customer a lot (Meyer and Schwager, 2007). In an online environment, the hedonic and functional elements affect the marketing mix of the organization because when a customer buys a product through the Internet, its requirements are totally different in comparison to offline environment (Constantinides, 2004).

**13. Service Process has a positive impact on customer satisfaction.**

*Service Process*

It is an amalgamation of the sequence of all different type of activities held in any organization, which may either be within the contact of the customer or not in contact of the customer (Tseng *et al.*, 1999). The customer gains more experience through those elements which are in direct contact as service operational units, service facilities, servicescape, front desk employees and many other things which are perceptible to the customers (Tseng *et al.*, 1999; Grace and O'Cass, 2004; Bigne *et al.*, 2008; Walter *et al.*, 2010; Tax and Stuart, 1997; Baker *et al.*, 2002).

The service process is divided into two categories: first, within the contact of the customer and, second, without the contact of the customer. The customer gains experience through elements which are within their contact i.e. service operational units, employees, service facilities or many other things which are perceptible to the customers (Tseng *et al.*, 1999). In any organization, the service process can become speedy by maintaining the physical environment of the organization, by training of employees, by resolving problems related to the service process, and by appropriately dealing with other service priorities and fiscal concerns (Tom and Lucey, 1995).

**14. Online aesthetic elements have a positive impact on customer satisfaction.**

*Online Aesthetics*

The aesthetic elements of the website play a critical role in an online environment. The aim of these elements is to catch the attention of the web-user in a short span of time and to create a positive sense about the quality of products/ services offered by the organization in the minds of the online users (Sun, 2002; Sheu *et al.*, 2009; Constantinides, 2004; 2010; Lee *et al.*, 2006; Cyr *et al.*, 2008).

In an online environment, despite the user based elements, experiences depend on the aesthetics of the website. In such a case, the attentively considered aesthetic elements are: design, presentation quality, design elements

and style of the website. These aesthetic elements have to capture the attention of the web user in a very short duration of time; the design and layout of the website are devised in such a manner that it attracts the users to browse the website. The aesthetic elements of the website affect the hedonic elements of the online user up to great extent (Constantinides, 2004).

## MANAGERIAL IMPLICATIONS

- Variables such as customer satisfaction, customer experience, marketing-mix, online hedonic elements, online functional elements, convenience, value addition and speed are dependent variables. These variables pose weak driving powers but they strongly depend on other variables. In the figure they are positioned at the top of the ISM hierarchy. They represent the desired goals of any organization and strongly depend on the other variables of the system. These variables appear as the resultant actions in case of proper evaluation of customer experience. Based on these external and internal variables, the managers of the organizations are able to predict the incremental advantages of their investment on the enhancement strategies of customer experience in the present and in near future also. Therefore, the managers should handle all these variables with special care as they represent the desired outcome in favour of the organization.
- In the linkage cluster, the variables are unstable in nature, so any change in them will certainly affect the other variables and also affect them through feedback. Therefore, the careful study of these variables is an essential requirement. The managers of the organizations should properly monitor these variables at each level of the evaluation process.
- The variables customer interaction, customization, presence of customers, core service, employees, servicescape, online aesthetics and service process are the independent variables with strong driving power and weak dependence power. Hence,

these variables act as 'key variable' for the survival and growth of any organization and work as a main driver for the effective evaluation of the customer experience in the organizations. The managers need to concentrate on these key variables more cautiously because these variables affect the basic touch points of the customers which contribute a lot in the development of customer experiences. Thus it is essential for the managers to develop the strategies in such a manner that the proper deployment of these variables can provide an enhanced level of satisfaction to the customer.

## CONCLUSION

In the highly competitive era of corporate reforms, the organizations are trying to enhance their marketshare by attaining and retaining their customers. In the recent years organizations have been focusing more on managing the experiences of customers, so that they are successful in bringing delight and satisfaction in customers effectively.

For such a purpose, organizations are in need of such factors which affect customer experience a lot, with the intention that the managers can work on those factors from the strategic level to operational level.

In this study, an attempt has been made to identify the factors of customer experience and find their interrelationships and moreover to identify their impact on the outcome variable of customer experience i.e. customer satisfaction.

For this purpose, an ISM based model has been developed which depicts the hierarchy of customer experience factors and also highlights their impact on the satisfaction level of the customer. The key findings of this study shows that the driving and dependence powers of all the factors gives an insight to the management of the organizations to understand how to boost up the satisfaction of their customers.

With the help of model variables, a roadmap has been developed that guides the researcher to develop various models in order to analyze and measure customer experience. The study acts as a platform for the present research



through which the researcher gets the proper steps to bridge the gaps that exists in the literature and moreover to resolve the present research problem. For such purpose, the research problem of the present study was formulated in the form of three research objectives. Though a good amount of theoretical and empirical literature on customer experience exists, the interrelationships among their factors and their impact on customer satisfaction have not been modelled to help the practicing managers. The managers should deal with independent variables at the strategic level only as they are the main influences of customer satisfaction. To achieve the clear results of each variable, the managers should consider the variables collectively rather than considering them individually.

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# The Impact of Macroeconomic factors on Capital Structure—Evidence from Sri Lankan Listed Firms

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## Abstract

*Corporate decisions on capital structure policy have long been a subject of debate and still remain an unresolved issue. The literature review reveals that considerable research has been made in the industrialized countries on the similar topic and very little is known about the capital structure of firms in developing economies. Capital structure is one of the most complex areas of strategic financial decision making, due to its interrelationship with macroeconomic variables. Thus, the purpose of this study is to bridge this gap, by examining the macroeconomic variables, such as prime lending rate, rate of inflation, GDP growth and size of capital market, as well as its impact on capital structure choices in Sri Lankan firms listed in Colombo Stock Exchange (CSE), during the period 2007-2011, using panel data.*

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**Keywords:** *Macroeconomic factors, Capital Structure, Panel Data, Colombo Stock Exchange Listed Firms*

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## INTRODUCTION

Even though capital structure literature has expanded significantly in the past half-century, it is still far from being complete. Capital structure plays an important role for any organization. The debt/equity decision is important because of the need to maximize returns to various organizational constituencies and the impact such a decision has on an organization's ability to deal with its competitive environment (Abor and Biekpe, 2005). Several theories have emerged to explain the mix of security and financing sources of a firm. Even though there is no universally accepted theory on the debt-equity choice, there are several theories

that have emerged in the last couple of decades, explaining firms' capital structure.

Corporate finance decisions affect the various facets of the corporate management directly or indirectly, which ultimately determine the wealth of the investors. Capital structure is an aspect of corporate financial management, which does have a practical significant relevance to managerial decisions. As a result, the market value of the share is likely to be affected by the capital structure decision. The main issue in capital structure decision is around the optimal capital structure. There are two schools of thought in this regard. One school pleads for optimal capital structure and the

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other does against it. David Durand (1959) identified the two extreme views—Net Income theory versus Net operating income theory.

Net Income (NI) Theory gives the idea for increasing market value of a firm and decreasing overall cost of capital. A firm can choose a degree of capital structure in which debt is more than equity share capital. It will be helpful to increase the market value of firm and decrease the value of overall cost of capital.

Net operating income theory or approach does not accept the idea of increasing the financial leverage under NI approach. It means, change the capital structure does not affect overall cost of capital and market value of firm. At each and every level of capital structure, market value of firm will remain the same.

Traditional Theory of Capital Structure is a mix of net income approach and net operating income approach of capital structure. Under this approach, the cost of capital declines and the market value of the firm increases with leverage up to a prudent debt level and after reaching the optimum point, leverage cause the cost of capital to increase and the market value to decline.

Modigliani and Miller (MM) theory or approach (1958) is quite opposite to the traditional approach. This states that, there is no relationship between capital structure and cost of capital. The increasing debt of a firm will not impact its cost of capital. The MM position changes when corporate taxes are assumed.

Some of the other important theories related to capital structure are, the agency theory (Jensen and Meckling, 1976; Myers, 1977), the signalling theory (Ross-1977), the pecking-order theory (Myers and Majluf, 1984; Myers, 1984), the trade-off theory and the free cash-flow theory (Jensen, 1986). However, each theory presents a different explanation of corporate financing. The agency theory of Jensen and Meckling (1976) suggests that firm incurs two types of agency costs, viz., cost associated with the outside equity holders and cost associated with the presence of debt in capital structure. Total agency cost first decreases and after certain level of outside equity capital in capital structure, it increases. The total agency cost becomes minimal at certain level of outside equity capital. Thus, this theory pleads the

concept of optimal capital structure. Ross (1977) developed a theory, based on the asymmetric information, that the choice of firm's capital structure signals to outside investors the information of insiders.

Bankruptcy and financial distress costs and agency costs constitute the basics of the trade-off theory. Under the trade-off theory framework, a firm is viewed as setting a target debt to equity ratio and gradually moving towards it. This indicates the existence of some form of optimal capital structure that can maximize the firm value. The trade-off theory has a strong practical appeal. It rationalizes moderate debt ratios. An alternative to trade-off theory is the pecking order theory which, more specifically, predicts that firms prefer to use internal financing when available and choose debt over equity when external financing is required. In summary, the trade-off theory highlights taxes, while the pecking order theory emphasizes on asymmetric information. The theory of free cash flow states that debt can be used as a controlling device that commits the managers to pay out free cash among shareholders that cannot be profitably reinvested inside the firm.

These theories have given consideration especially to firm level characteristics, with the passing remarks on the probable influence of macroeconomic factors. The role of macroeconomic factors in the determination of capital structure of the companies operating in developing countries, have been totally ignored. More shortcomings of the existing literature to be identified when we consider the influence of some specific macroeconomic factors that influence the capital structure. This gives rise to the question: Is there any effect of macroeconomic environment upon the capital structure at all? In response, it might be argued that as the finance manager makes his decision in the monetary and real market framework, within which firms operate. The macro-economic environment is obviously expected to exert a significant influence on all of the financial and investment decisions of the finance manager. The inadequacy of the literature regarding the influence of the macroeconomic environment upon the corporate capital structure, thus, demands a structured theoretical and empirical analysis in order to



identify the role of macro economy in the determination of corporate capital structure in an emerging market.

Very few attempts have been made to-date in the Sri Lankan context, to explore the influence of the macroeconomic factors on the capital structure. The main objective of the present study is, therefore, to determine the impact of the macroeconomic factors on the capital structure of the Sri Lankan firms.

The paper is organized in the following manner: the paper starts with a brief introduction to the background of the study and the research objectives. Section 1 summarizes the related literature. Section 2 explains the importance and significance of the study. Section 3 gives description of the methodology. Section 4 discusses the results from the model used and finally, Section 5 presents the conclusion.

## LITERATURE REVIEW

Review on both demand and supply side of the traditional drivers of leverage decisions are discussed in this section.

From the findings of different scholars (Rajan and Zingales, 1995; Booth *et al.*, 2001; Frank and Goyal, 2003; Antoniou *et al.*, 2008; Beck *et al.*, 2008; de Jong *et al.*, 2008) it is evident that what determines the capital structure is different from each firm and each country. There can be similarities in the factors, but the degree to which it makes an influence will depend on that particular firm. The available literatures on capital structure decisions explained the firm specific and economic factors vary according to the industries, countries and institutional settings. Booth *et al.*, (2001), Demirgüç-Kunt, and Maksimovic (2001) found that, even though, the capital structure in developing countries is affected by the same determinants as in developed countries, differences persist across countries, indicating that country-specific factors exist. While De Jong *et al.*, (2006) evaluated the role of both firm-specific and country-specific determinants of capital structure in 42 countries. According to them, the impacts of firm specific determinants are not equivalent around the world, since they depend on country-specific variables. Bopkin (2009) noted that firm-specific

variables and macroeconomic conditions have a direct influence on firm's choice of security issuance, while Korajcny and Levy (2001) found that a firm's choice of security issuance is dependent on macroeconomic conditions and firm-specific variables. They postulate that firms tend to time the issuance of securities to periods of favourable macroeconomic conditions. Antoniou *et al.*, (2002) found that the capital structure choice of a firm is not only affected by its own specific characteristics, but also by its surrounding environment such as general health of the economy, the existence of a stock market as well as the size of the banking sector. Further, De Jong, Kabir, and Nguyen (2007) argue that country-specific factors are important in explaining the capital structure of international firms. They found that country-specific factors have both a direct as well as an indirect impact on international firms' capital structure.

Prime rate is the most decisive factor, because it is commonly used in the banking system for short-term interest rate. Every type of lending institution uses the prime rate as an index or foundation rate, in deciding the price of various short-term loan products ([www.wsjprimerate.us](http://www.wsjprimerate.us)). Drobetz *et al.* (2007) noted that, when ascertaining the impact of macroeconomic factors on the speed of adjustment towards target leverage, firms adjust faster in favourable macroeconomic conditions than under unfavourable conditions. This implies that when interest rates are low and the risk of disruptions in the global financial systems are negligible; firms' speed of adjustment towards target leverage is faster.

Empirical results also indicate that the major trends in stock-bond correlation are determined primarily by uncertainty of expected inflation. In most developing countries, high inflation rates reduce the cost of borrowing as well as the value of debt. Frank and Goyal (2004) use quoted public companies in US over year 2000-2005 and evaluate both micro and macro factors which impact on capital structure decisions. They conclude that, expected inflation is a most reliable macro determinant in developed countries like US. According to Franks and Broyles (1979), relationship between gearing and inflation depends to the extent expectations are reflected in interest rates. If inflation exceeds expectation then firms will gain at the expense

of investors, whereas if inflation is less than expected then investors will gain at the expense of firms. A positive relationship between gearing and inflation can only exist in the long run if investors are consistently gulled with respect to interest rate expectations. Bopkin (2009) also reported statistically insignificant inverse relationship between all the measurements of capital structure and inflation.

Few studies (Rudolph, 1978; De Jong *et al.*, 2008; E.K. Kayo and H. Kimura, 2011) examine how a country's GDP growth rate affects the firm's choice of financing. According to the theoretical model of Rudolph (1978), there is a positive relationship between corporate gearing and the growth of GDP as well as the growth of aggregate investment, underpinned by intuitive investment cycle theory. On the contrary, E.K. Kayo and H. Kimura (2011) found that GDP growth has a negative relationship with debt.

The development of capital market also influences capital structure of the firm (Booth, Aivazian, Demirguc-Kunt and Maksimovic, 2001). Demirguc-Kunt and Maksimovic (1999) found a negative correlation between stock market development and the ratio of both long-term and short-term leverage. Antoniou *et al.*, (2002) found that the choice of a capital structure by a firm is not only affected by its own specific characteristics, but also by its surrounding environment, such as general health of the economy, the existence of a stock market, as well as the size of banking sector.

It is worth reviewing the previous studies on listed companies that are related to leverage and capital structure of Sri Lankan context. There are researches carried out in Sri Lanka with respect to capital structure to explore the determinants. Samarakoon (1999) discovered that use of long term debt is relatively low in Sri Lanka. He further found out that the firm's size is positively associated with leverage, indicating a tendency for large firms to use more leverage. Profitability was found to be negatively related to leverage and tangibility and growth opportunities were not related to debt equity balance of the companies. Prahalathan (2007) carried out a study with the objective of finding out the relationship between capital structure determinants and

leverage level of the listed manufacturing companies in Sri Lanka. The findings of the study showed that the direction of the explanatory variables such as, tangibility, profitability, firm size and non-debt tax shields with total debt largely consistent with the explanations of trade-off theory and prove past empirical findings. Finally, Buvenendra (2010) revealed that implication of pecking order theory is more relevant than static trade off and agency cost theories in Sri Lankan listed companies. Further, she found in services companies, leverage decision is influenced by the profitability, size and growth variables and in manufacturing companies leverage decision is influenced only by profitability. Thus, all these studies are focused on firm-related factors and do not take into account the macro factors.

The common distinct feature of the business environment in most emerging markets, in general, was state intervention in financial markets. It has been a key feature in developing countries until the process of liberalizing them started in the mid-70s as part of the overall policy of economic liberalization introduced in many of these countries (Khatkhate, 1998). The financial systems of these countries that were expected to meet the needs of private enterprises—by locating, securing and channeling funds to them—were found to be under-developed for carrying out this task effectively and efficiently. The Sri Lankan business environment has been growing rapidly after the liberalization of the economy in 1977. With liberalization leading to globalization, listed companies are expanding their international dimensions, along with export sales and diversifying operations at a rapid pace. Those changes and developments necessitated the competitive companies to change their capital structure or to deviate from the traditional theoretical models. The Colombo Stock Exchange (CSE) is the only stock exchange in Sri Lanka. It includes nearly 290 listed companies. Like other developing economies, the area of capital structure is relatively unexplored in Sri Lanka as well as in emerging economies. Limited research work exists in this area. The purpose of this study is to fill this void to some extent by providing empirical evidence from a developing country's perspective.



## DATA AND METHODOLOGY

### Data

For analytical purpose, i.e., for finding out the influence of macroeconomic factors on the corporate capital structure, 50 companies were taken as sample companies. These 50 companies were selected from the listed companies of the CSE (Colombo Stock Exchange), based on highest market capitalization and the changes in their structure can influence Colombo Stock Exchange. The companies under banking and finance sector were eliminated due to their different financial and business nature. The study analyses the data for 5 years from 2007/08 to 2011/12. In firms which have their financial year ending in March 31<sup>st</sup> year-end companies 2007/08 to 2011/12 period is considered whereas for the companies which has December 31<sup>st</sup> year-end the data collection period is 2007 to 2011. The information about the capital structure was obtained from the published annual reports of the respective companies and the handbook of Colombo Stock Exchange. The macroeconomic information was collected from annual report of Central Bank of Sri Lanka 2012 and the World Bank data. The data so obtained was processed with E-views software package with suitable statistical and econometric tools.

The variables used in this study and their measurement are largely adopted from existing literature (De Jong *et al.*, 2008; Bopkin, 2009; E.K. Kayo and H. Kimura, 2011). To examine the influence of country-level factors on capital structure, the following have been considered and their influences on capital structure have been analyzed. The selected macroeconomic factors, known as independent variables are:

1. Prime lending rate (PLR): the average rate of interest charged on loans by commercial banks to private individuals and companies.
2. Rate of inflation (INF): annual inflation rate of growth in consumer price index.
3. GDP Growth rate (GDP): it is the change in gross domestic product in current market prices from a period to the next.
4. Size of the Capital Market (SCM): overall market capitalization to GDP.

In order to calculate the leverage (LEV) ratio<sup>1</sup> of a firm, we adopt the following widely-used measure is:

1. Leverage ratio (LEV): Total debt (borrowings + short term debts) to total assets ratio in book values.

### METHODOLOGY

This study employed panel data procedures because sample contained data across firms and over time. The use of panel data increases more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency. There are several estimation techniques to address these issues and the two most prominent are the fixed effects model (FEM) and the random effects model (REM). We used these models in this study to estimate the effects of explanatory variables on the debt ratio (a measure of leverage). Further, this study also employed the Hausman test (1978) to determine which estimation model, either fixed or random effects, best explains our empirical results. In addition the multi-collinearity has been tested for the sample data before the estimation of the coefficients of the model. The general form of the model can be stated as:

$$Y_{it} = \beta_0 + \beta \text{Micro}_{it} + \mu_{it} \quad (1)$$

Here,  $\mu_{it}$  is a random term expressed as  $\mu_{it} = \alpha_i + \varepsilon_{it}$  where  $\alpha_i$  is individual-specific effect or cross-section error component and  $\varepsilon_{it}$  is the remaining combined cross-section and time series error component. The expanded model for this study is stated as follows.

Random effect model

$$LEV_{it} = \beta_0 + \beta_1 PLR_{it} + \beta_2 INF_{it} + \beta_3 GDP_{it} + \beta_4 SCM_{it} + \mu_{it} \quad (2)$$

Fixed effect model

$$LEV_{it} = \beta_0 + \beta_1 PLR_{it} + \beta_2 INF_{it} + \beta_3 GDP_{it} + \beta_4 SCM_{it} + \mu_{it} \quad (3)$$

Where:

$\beta_0$  = the constant term,  $\beta_0$  = the  $y$ -intercept of firm  $i$ ,  $\beta_1 - \beta_4$  = the coefficients of the independent variables,  $i$  = listed firm,  $t$  = time or year, LEV = leverage, PLR = prime lending rate, INF = rate of inflation, GDP = growth rate of gross domestic

product, SCM=size of capital market,  $\mu_{it}$ =the error term.

## RESULTS AND DISCUSSIONS

### Tests for Data and Models

The sample data were tested for multicollinearity before estimating the coefficients of the model. Results are presented in Table 1.

From the above table it can be seen that the Null Hypothesis of Unit Root (assumes common unit root process) has been rejected at 1% or 5% and all the variables are found to be Stationary at levels (Gujarati, 2003).

Since our sample contained data across firms and over time, there might be cross-sectional effects on each firm or on a set of group of firms. In order to deal with those effects, two panel econometric techniques, namely, the random effects and fixed effects estimation models are employed. Results of these estimation models are presented in Tables 2 and 3.

**Table 1.** Stationarity Test

Variables	Levin, Lin & Chut	Breitung t-stat
LEV	-1.00E+14**	-2.855**
PLR	-9.210**	-2.884**
INF	-20.829**	-11.273**
GDP	-12.377**	-4.317**
SCM	-23.085**	-5.874**

Table 2 shows the results of random effect model, where the effect of the panel is random and whatever phenomenon observed from the analysis is common for the companies, implying there is no individual effect of them. On other hand, Table 3 depicts the results of fixed effect model where there is an effect of panel and the phenomenon observed is not same across companies. Hausman (1978) test is used to choose between a fixed effects model and a random effects model. The null hypothesis of the Hausman test states that there is no significant difference between the coefficients of fixed and random effects estimators (Gujarati and Sangeetha, 2007). Results from this study indicate that the random effect model is better than fixed effect one, as null hypothesis cannot be rejected at 10%. It can be seen from Table 2 that F statistics is significant at 1% and the null hypothesis has been rejected, since all beta(s) are equal to zero. From R square value, it can be said that 7% of the change in the Leverage is caused by the change in independent variables.

**Table 3.** The effect of explanatory variables on leverage using the fixed effects estimation model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
PLR	0.013678**	0.005	2.735387	0.0068
INF	-0.00312	0.004124	-0.75634	0.4504
GDP	-0.00281	0.011611	-0.24213	0.8089
SCM	0.001307	0.002988	0.437412	0.6623
C	0.145958	0.071751	2.034227	0.0433

Significant at 5%\*, at 1%\*\*

**Table 2.** The effect of explanatory variables on leverage using the random effects estimation model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
PLR	0.013991**	0.004993	2.80231	0.0055
INF	-0.00319	0.004118	-0.77429	0.4395
GDP	-0.00291	0.011594	-0.25134	0.8018
SCM	0.001378	0.002984	0.462006	0.6445
C	0.126963	0.077694	1.634141	0.1035
R-squared	0.071126	Mean dependent var		0.057222
Adjusted R-squared	0.05596	S.D. dependent var		0.093138
S.E. of regression	0.09117	Sum squared resid		2.036447
F-statistic	4,690029	Durbin-Watson stat		1.881948
Prob.(F-statistic)	0.001154			

Significant at 5%\*, at 1%\*\* Hausman Test: Chi - 1.65154 df - 4 P - 0.7995



## Results of Panel Data Analysis

The findings related to the impact of macroeconomic factors on the capital structure in the Sri Lankan scenario deviate from international findings in many ways. There is no concrete evidence from which we can state that there is a relationship between macro factors and leverage. Friedman (1972) has suggested that modification of interest rate structures and its degree of flexibility is a concern to policy makers, particularly in countries where macroeconomic policies have led to uncertainties regarding future interest rates and rates of inflation, or in countries where the regulatory framework has been inadequate. According to this study, among the selected independent variables, only the prime lending rate does have a significant effect on the leverage ratio of the companies, while other variables have no observable effect on it. The results reported in both models display that the prime lending rate is positively significant at 1%. As per other studies (Nandy M, 2008), higher interest rates may give rise to higher debt interest tax deductions, and encourage greater leverage. On the other hand, higher rate of interest may mean that debt is costlier and firms may prefer equity financing. So, there could be either a positive or negative relationship between the macro factors, i.e., the level of interest rates and the leverage ratio. In this study, a positive relationship between the leverage and prime lending rate is dominating, as Sri Lanka induces the management of the companies to resort to debt financing when the interest rate is more to take tax advantages, due to deductibility of interest on debt for taxation purpose. Further Sri Lanka is also based on bank oriented economy similar to some other developing economies, than market oriented. As such, banks are able to economize on the cost of collecting savings from heterogeneous saving units, by exploiting economies of scale in gathering and processing of information. This consequently motivates firms to access funds from the banks easily, hence the positive relationship.

On the contrary, all other factors, viz. rate of inflation (INF), GDP growth rate (GDP) and size of the capital market (SCM) have insignificant impact on firms' capital structure

choices. This is underwritten by the fact that the t-values of these variables lose their statistical significance, in both models. It will be seen that the coefficient of the size of capital market is positive while rate of inflation and GDP growth are negative. However, as has been already stated above, these are insignificant. This may be due to the fact that macroeconomic factors do have a gestation period before these could impact on the capital structure. This could be due to the short duration of the period under consideration, that has allowed only five annual data, which is insufficient to ascertain its impact on the capital structure.

## CONCLUSION

This study on Sri Lankan firms presents interesting findings regarding the impact of macroeconomic factors on capital structure choices of firms, by employing a panel data analysis covering 50 firms over a 5-year period from 2007-2011. Prime lending rate is found to be the only factor having a significantly positive influence on capital structure decision of Sri Lankan firms. This may be due to the fact that development in the banking industry of the economy has significant impact on capital structure decisions of firms. In the Sri Lankan scenario, service sector, inclusive of banking and finance industry, is one of the main drivers of growth of the economy by its contribution in the raising of overseas funds, by way of remittances. The banking sector is able to diversify its sources of funding and improve higher capital levels, adequate liquidity buffers and healthy earnings. This, in turn, facilitates firms to access funds for their expansion, easily. Other macro factors, such as rate of inflation, GDP growth and size of capital market are not directly impacting capital structure decision of firms. However, the corporate managers may be taking into account the macroeconomic factors while making decision of their capital structure, so as to evolve a more sustainable capital structure decision.

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# Soldier Family Stress

S.S. Chauhan and A.P. Choudhary\*

## Abstract

*The Armed Forces are the guardians of the Soereignty of India. By their indomitable will, defatigable energy and a treadition of excellence both in war and peace, their service to the Nation stands out as a pinnacle of Karma, acknowledged both by the Nation and Scriptures. These men are motivated to go beyond the call of duty; they go beyond the human self, by forgetting their wife, children, parents, responsibilities, dreams and comforts and offer the supreme sacrifice of life to safeguard the honour of the Nation. The spirit of these men defies bullets, torn limbs, and bleeding hearts, it defies inclement weather and harsh conditions of service; it defies pain, human energy and the fear of death, Death can take them away, not their spirit, not their courage and acts of conspicuous bravery. These are the men who live and breathe their last in honour of their duty. These are the men we salute and whose families we pray for. These honorific and brave men in their life and in their act of going beyond the call of duty and self, have set for us values worthy of emulation.*

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**Keywords:** *Soldier family stress, Effects of stress, Causes of stress, Organisational programmes, Remedial techniques*

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## INTRODUCTION

The responsibility of ensuring robust mental health of soldiers lies on everyone of those involved in the recruitment, training and leading such men in Armed Forces. Soldiering is a challenging role and has to be performed with utmost dedication. The changing scenarios in the country along with the environmental and operational commitments together have put enormous demands for adjustment on the uniformed services.

In addition to these challenges, the decreasing family support due to rapidly

vanishing joint family system, increasing aspirations, materialism, not matching with present emoluments and eroding individual values like selflessness, and accommodative attitude are compounding stressors.

The reconnection process that a military family goes through upon the return of a loved one is emotional and demanding. The military families that have successfully negotiated its demands are some of the strongest families in America.

1. "Even though you know internally that this is part of your mission you signed up for

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this, that doesn't mean you can always deal with it," says Joyce Wessel Raezer<sup>1</sup> of the National Military Family Association a non-profit advocate for military families. "Separation is a major stressor" for the family.

2. The biggest overall challenge to family life is the frequency with which young families must move, uprooting friendships support systems and plan for school, Raezer's report says.
3. Families under stress can become crucibles for alcoholism, domestic abuse and mental illness, experts say.
4. The military has learned from its experiences with families in the Gulf War and intensified its support systems.

### Definition of Stress

Selye<sup>2</sup> (1976), a pioneer of stress research, points out that "Stress is a scientific concept which has suffered from the mixed blessings of being too well known and too little understood." Consistent with Selye's view, it is argued here that when concepts from basic science become popularized, there is potential for oversimplification or alteration of the term that may ultimately belie its origins and add to confusion.

### Conceptualising Stress

The word stress is derived from the Latin word "stringi", which means, "to be drawn tight". Stress can be studied under a stimulus-based paradigm, where certain conditions otherwise called "stressors", like competition, challenges, workload, heat and cold and time pressure cause a stress reaction. Stress can also be studied under a response-based paradigm, which defines it as the pattern of responses otherwise called "strains", which can be physiological, behavioural, cognitive and effective that result from exposure to a stressor.

### Categorisation of Stress

Some schools of thought hold that there are four main types of stress.

- **Eustress** is a type of short-term stress that

gives you momentary strength. It occurs at times of increased physical activity, enthusiasm and creativity. For example, an athlete experiences eustress before a competition.

- **Distress** is a negative stress brought about by constant changes to a routine. It creates feelings of discomfort and unfamiliarity. There are two types of distress, acute (brief and intense) and chronic (prolonged but not necessarily less intense).
- **Hyperstress** occurs when a person goes over the line of what he or she can handle. This type of stress results from being overworked or overwhelmed.
- **Hypostress** is the opposite of hyperstress; it occurs when a person is feeling stagnant or bored. People who experience hypostress are often restless and longing for inspiration.

### Measurement of Stress

Stressors can be physical, physiological and psychological. Holmes and Rahe, two psychiatrists of the United States Navy conceptualised life change units (LCU) to measure chronic psychological stress. Based on their work, they allotted points to events experienced by most in their lifespan. For example, the psychological weight of the death of a spouse was considered as 100 LCUs and a cumulative score was derived based on a person's experience.

To measure the life change units in Indian soldiers, a standardised stress scale known as the AFMC life events scale was developed in 2001, which rightly commemorates the institution, where it was developed.

### Type of Stresses

1. **Mental Stress:** Mental stress comes in lots of different forms. Social stressors include; pressure from work; an impending important event; relationship problems such as with a spouse, child, or parent; or the death of a loved one. Any major change in life can result in mental stress, depending on how the mind interprets the event, and even when an event is positive—a marriage, a graduation, a new job, a Caribbean



cruise—the change it involves, even if temporary, can be overwhelming.

As a result of mental stress you might experience an inability to concentrate, uncontrollable worrying, feelings of anxiety and panic, sadness, depression, fatigue, irritability and a host of other emotions. Yes, some of these symptoms are often a product of the mind and its interpretation of and obsession with or attachment to stressful events. How do you stress-proof your mind? With mental stress management, of course.

Stress management for the mind and the spirit is specifically targeted to help still, calm, and quieten the overactive mind. These techniques help you to recognize the thought processes that are increasing your stress, the attitudes that can trigger a stress response, and the way you tend to cling to ideas as if they were life preservers. Some of these techniques are related to physical stress management (specifically, relaxation techniques) because again mind and body are inextricably connected. But if you are experiencing even a few of the mental negative effects of stress or feel that your spirit is sorely in need of reinforcements and want to go straight to the source, try these stress management techniques for mind and spirit.

2. *Spiritual Stress:* Spiritual stress is one more nebulous than mental or physical stress. It can't be measured directly, but it remains a potent and harmful form of stress that is inextricably linked to physical and mental stress. What is spiritual stress? It is the neglect of and the eventual loss of our spiritual lives, or the part of us that hopes, loves, dreams, plans and reaches for something greater and better in humanity and in life. It is the noncorporeal within us, the soul.

Have you ever known someone who, even when faced with insurmountable obstacles, pain, trauma, tragedy or loss, continues to be happy? Such people have nurtured and nourished their spiritual sides, either through effort or because it comes naturally. Sure, some people don't buy into the idea that people have a spiritual side or a soul. It's all chemical, they say. Others prefer to say it's

all related, all intertwined like a dramatic and intricate web. The bottom line? If you manage your stress with the whole you in sight, you'll manage stress fully, effectively, and in a way that really works for your unique self.

3. *Family Stress:* Family is another big area of stress for many people. Our families have an intimate knowledge of who we are, or who we used to be, and that can be stressful, especially if we're trying to escape who we used to be.

Although all families are stressful to some extent, for some people, families are particularly taxing because of a dysfunctional aspect or because of past events that are painful. If your family is an area of stress for you, you may benefit by making amends or by deciding to move on. You may be estranged from your family or fully in their clutches on a daily basis. Either way, recognizing family stress is the first step to managing it. You might consider techniques that bolster your people skills or routines that strengthen the foundation of your own self-esteem. Journaling and other creativity techniques can be highly effective for dealing with family stress, and don't forget friend therapy.

4. *Environmental Stress:* Whether you live in a polluted area, such as near a busy street or in a house with a smoker (or if you are a smoker), or are allergic to something in your surroundings, you'll be exposed to environment changes. May be your neighborhood has changed a lot in the last few years. Maybe you are remodelling your home, or moving to a new home, or a new city. Changes in the household, such as the loss or gain of a family member or even a pet, are considered environmental stress. So is a marriage or a separation. These are also sources of personal and social stress, but they are environmental stress because they change the makeup of your household.

Environmental stressors are largely unavoidable, but there are techniques that can help you to turn them from stressors into nothing more than events.

5. *Personal Stress:* This broad category covers

everything from your personal perception of relationships to your self-esteem and feelings of self-worth. If you are unhappy with your personal appearance; have a negative body image; feel inadequate, unfulfilled, fearful, shy and lacking in willpower or self control; have an eating disorder or addiction (also sources of physiological stress); or are in any way personally unhappy, you are suffering from personal stress. Even personal happiness can cause stress. If you are madly in love, just got married, were recently promoted or just started the business of your dreams, you'll also experience personal stress. Under these situations, it's common to feel self-doubt, insecurity, or even overconfidence that can undermine success.

The most effective techniques for dealing with personal stress are those that help you to manage you own thoughts and emotions about yourself.

6. *Physiological Stress:* While all forms of stress result in a stress response in your body, some stress comes from physiological problems like illness and pain. You catch a cold or flu and experience stress due to the illness. You break your wrist or sprain your ankle, that stresses your body, too. Arthritis, migraine headaches, cancer, heart attack—all of these physiological ailments—some mild, some serious—are forms of physiological stress.

Physiological stress also covers hormonal changes in the body, from PMS to pregnancy to menopause, as well as other changes or imbalances such as insomnia, chronic fatigue, depression, sexual dysfunction, eating disorders, and addictions. Addictions to substances that harm the body are a source of physiological stress. Misuse of alcohol, nicotine and other drugs is stressful. Even prescription drugs can be a source of physiological stress. While relieving one condition, they may cause side effects that are stressful.

The best way to relieve physiological stress is to get to the source. Many stress management techniques directly address physiological stress.

7. *Social Stress:* Social stress is related to your

appearance in the world. Getting engaged, married, separated or divorced, for example, while all sources of personal stress, are also sources of social stress because of the societal opinions and reactions to the forming and breaking up of the marital relationship. The same goes for becoming a parent, getting a promotion, losing a job, having an extramarital affair, coming into a lot of money or losing a lot of money. Society has a lot to say about these events, which are bound to affect the opinion other people have of you, right or wrong warranted or not.

### **Effect of Stress on a Soldier Family**

Basically family members are effected by psychichological disorders, it follows:

1. Organic mental disorders like delirium dementia and other organic psychosis.
2. Mental and behavioural disorders due to alcohol and other psychoactive substances.
3. Schizophrenia and Delusional Disorders.
4. Mood Disorders like depression and mania.
5. Neurotic, stress-related and somatoform disorders like:
  - (i) Anxiety, panic disorder
  - (ii) Phobic anxiety disorders
  - (iii) Dissociative disorders
  - (v) Somatoform disorders
  - (vi) Acute stress reaction
  - (vii) Adjustment disorder
  - (viii) Post-traumatic stress disorder
  - (ix) Other neurotic disorders
6. Behavioural syndromes associated with physiological disturbances and physical factors:
  - (i) Eating disorders
  - (ii) Sexual dysfunctions
  - (iii) Sleep disorders
7. Disorders of adult personality and behaviour



8. Impulse disorders
9. Sexual perversions

### Organizational Programmes

Since the beginning of Operations Iraqi Freedom and Enduring Freedom, hundreds of thousands of American soldiers have been deployed overseas to fight—over half of them are parents. That implies a lot of children saying goodbye to Mom or Dad—and then, hopefully, welcoming that parent home again.

For soldiers and their families, the reunions are both long-awaited and bittersweet. The soldiers are learning how to be home again, where danger does not lurk around every corner. Their spouses and children are going through the readjustment of having their loved one back home after so many months of being without them.

The damage to a marriage can be serious. According to the Psychology Department for the U.S. Army Medical Department Activity, the divorce among enlisted families rose to 53% between 2000 and 2004, and divorces among officers have also risen. At least some of the increase is likely due to both the stress disorders that soldiers face when their deployments end, and from the strain on families caused by repeated deployments and extensions of time overseas.

The military has developed some programs to help the families understand and deal with the strain the deployment will cause like communication classes that employ trained staff to help spouses understand and address each other's concerns. They also offer individual and marriage counselling.

During a soldier's deployment his or her entire family may struggle with depression. A soldier's homecoming may ease the sadness but sometimes it takes more, including counselling, medication or both, to restore a family's balance. And all of these issues are exacerbated if the returning soldier has been physically disabled or wounded.

For soldiers returning home from war, post-traumatic stress disorder can also be a factor. Having missed many special moments in their children's lives, such soldiers are eager to

connect with their family especially children. They are under a lot of stress as they can only hope for an immediate acceptance of their relationship with their family. Not only that they have to prepare their family before leaving, too.

But for the children themselves, there is no going back. Their life changes overnight when their parent is deployed, and it keeps changing. As their life changes so does their expectations.

Younger children, especially newborns and toddlers, will face different issues. Some bases employ parent support specialists who help the homecoming parent learn how to nurture, hold, bond with and feed an infant that was born in their absence.

Re-establishing a relationship with a child is not a simple task. According to the Department of Defense and The National Center for PTSD the following are some tips to help the families that are facing the reconnection process.

1. Allow one-on-one time with each member of the family. The parent that has come home needs to spend time with his/her spouse and each child in an individual setting. Go to the park, go shopping and take wife, daughter or son out to lunch.
2. Spend time as a family.
3. Support your children by going with them to be part of their extra-curricular activities.
4. Continue with routines that the family is familiar with.
5. Help other families whose loved ones are still deployed.
6. Seek counselling, both individually and as a family.
7. Take advantage of military outreach programs and other military support groups.
8. The Army has programs for loved ones that "teach them how to carry on day-to-day business affairs." and workshops "to teach them how to take care of themselves during the separation," says Delores Johnson<sup>3</sup> director of family programs at the U.S. Army Community and Family Support Center.

### **Army Wives Welfare Association**

The aim of the Army Wives Welfare Association is to support and enhance the official welfare efforts within the army, focusing especially on the welfare of families, children and widows of all ranks and retired personnel of the army and also to take active part in the activation of central and state governments in their efforts towards national re-construction aimed at improving the living conditions of rural poor amongst the above category of persons and protecting the human rights violation of the army personnel and their families. Objectives are as follows:

- Reaching out to the widows and help them establish themselves.
- Rehabilitation of battle casualties.
- Running of special school for handicapped children of army personal.
- Providing vocational training to families.
- Awarding scholarship to meritorious and needy children.
- Mother and child care
- Welfare of patients in hospital.
- Family health and hygiene
- Family support and counselling programmes.
- Relief and rehabilitation of widows and children.
- Promotion of human rights of army personals and their families.

#### List of Welfare Activities:

- Pre-Primary Schools/Primary Schools
- Vocational Training Institute
- Boys and Girls Hostel for Schools/Colleges
- Shopping Centres/Complexes
- ASHA Schools
- Sainik Niwas at major Army Hospitals
- Sports and Adventure/Gym Complex/Health Club

- STD/ISD/PCO Booth/Community Centre
- JCO's/OR/Institute/Club
- Family Welfare Centres
- Children' Park
- Cinema Hall
- Computer Centre
- Cable TV Room and Video Library
- LPG Agencies

### **A Hope for the Challenged Children**

ASHA means Hope. Asha School, Kolkata helps children with various disabilities by providing them with skill so that they can stand on their own feet and can contribute to society.

At present there are 72 students with various disabilities like Cerebral Palsy, Mental Retardation, Autism, Hearing Impairment and other disabilities who undergo regular education and therapy; in addition there are 24 very young children who are managed under the early intervention programme as they are too young for school education.

The children in ASHA school are exposed to various developmental and vocational training, therapies including speech, play, dance and music apart from special education and also when required, put through occupational therapy and physiotherapy.

This school has highly trained staff specific for challenged children. This includes special educators, including one for the hearing-impaired. In addition there are also an occupational therapist, music and dance teacher, arts and crafts teacher, drawing teacher who train these children in various disciplines. The staff strives for further professional up-gradation by attending various workshops. It imparts confidence, moral values, skills, formal education while minimizing disabilities. It strives to wipe off the barriers between the able bodied and differently abled.

### **Remedial Techniques**

The Lazarus<sup>4</sup> (2000) made a logical sequence of stress coping effort:



- (i) Identify the problem
- (ii) Generate alternative solution
- (iii) List and weigh the advantage and disadvantage of each approaches.
- (iv) Evaluate the desired outcomes

There is evidence that fitness moderates the negative effects for life events. (Roth<sup>5</sup> & Holmis, 1985, 1987)

Marriage is also the single strongest source of support promising for most people. (Story<sup>6</sup> & Bradbury, 2003).

The people with high incomes have more control over stressors, possess a wider range of coping options, and are potentially at lower risk of developing stress response. (Gallo<sup>7</sup> & Mathews, 2003)

## 1. Time Management For Mothers

Being a mother can be extremely rewarding, as it brings immense joy into your life. At the same time, it is a lot of is hard work, too. It is time-consuming and can be very tiring. After all, few truly rewarding experiences come without effort. And mothering is one of those things that you get more out of when you put more in. But there are other things that also require your attention. Demands from family, friends, work, place of worship and other aspects of your life are also important. Therefore, time management becomes essential for mothers. Getting everything in including time for yourself means developing better time management habits.

**To-do list:** Making a to-do list should be part of your evening routine. Take a few minutes to quietly think and make a list of what you need and want to get done the following day.

**Prioritise:** This is perhaps one of the most important things you can to do in terms of time management. Unfortunately, there is rarely time in the day to accomplish everything you would like to do. Poioritising is important. You need to evaluate what is important to you and what activities you consider vital.

**Organize:** Organization can be extremely helpful in terms of time management. Go over your to-do-list for the following day and prepare

as much as you can ahead of time. Is the diaper bag fully stocked? Do you have the mail ready to be put out? Laying out your outfit and especially the kids' uniforms the night before can help you save time the next morning.

**Routine:** A routine can seem so boring these days. But the fact of the matter is that a general routine offers great time management help for moms. This is especially important for working moms. This doesn't mean that every minute of every day has to be scheduled. Rather, a routine sets up regular time frames for work, play and quality family time. Routines also help kids. Most children are much happier when they are on a schedule.

**Time for you:** This is an important part of time management for mothers. You are more likely to be a good mother if you feel generally happy about yourself and you take time out for yourself. Additionally, when you take the time to re-energise yourself through exercise, relaxation, meditation and recreation, you can actually become more productive, suing your time more efficiently.

## 2. Breathing Meditation

First, practice breathing deeply. Then, when you feel you can breathe from the lower part of your body rather than from your upper chest, sit comfortably, either on the floor, or in a chair. Sit up straight so that you aren't scrunching up your body's breathing space. Imagine you are being suspended from above so that the effort of sitting up straight feels effortless. Now, take a long, slow, deep breath through your nose, and in your mind, count slowly to five. When you've inhaled fully at five, hold the breath for five more counts. Then, slowly release the breath through your nose to the count of ten. As you breathe and count, your mind will need to concentrate on the counting. Now, it's time to focus on the sound and feel of the breath, as in zazen meditation. Focus completely on the breath.

Keep breathing in this way for several minutes. Increase your breathing meditation time by two minutes per week until you've reached fifteen to thirty minutes once or twice each day.

### 3. Mantra Meditation

Any concentrated focusing while repeating a sound can be called a mantra meditation, whether it's Sufi chanting or the recitation of the rosary prayer. If you choose a word or phrase that means something to you, you may feel your meditation has a more personalised feel to it. Your mantra can even be an affirmation like "I am happy." Any word or phrase will do, but here a few you might try if you don't already have something in mind.

Mantra meditation disciplines the mind, sharpens the focus, and even improves the depth of the breath and the capacity of the lungs. It's also supremely relaxing.

To practice mantra meditation, find a quiet place to sit, in the position described for yoga meditation or even in a chair. Get situated, centered, and in a comfortable position. Take a few relaxed breaths, then slowly begin to repeat your mantra with every exhalation of your breath, repeat for five minutes at first then build up by two minutes each week, until you've reached a comfortable period of time between fifteen and thirty minutes once or, if possible twice each day.

### 4. Mandala Meditation

In the mandala meditation, which comes from the Tibetan culture, the focus of mediation isn't placed on a sound but on a beautiful object; a mandala. Mandalas are circular pictures, sometimes very plain, sometimes highly ornate, that are used for mediation. The round form and, often, the inner lines of the picture, draw the eye to the center of the mandala, helping the mind to focus on that center point, Mandalas are thought to be symbolic representation of the universe, making them the perfect point of focus.

Hang or place the mandala at just below eye level from a sitting position, and sit four to eight feet away from it, depending on how comfortable you feel. Sit comfortably cross-legged, in a kneeling position, or on a small bench or a chair. If sitting on the floor, use a cushion to make yourself more comfortable. Take a few relaxed breaths. Then, look at the

mandala. Instead of following your breath or a sound, use the mandala as our point of concentration. Examine it in detail. Start with five minutes, then add two minutes every week until you are up to fifteen to thirty minutes of mandala meditation once or twice a day.

### 5. Chakra Meditation

According to yoga and other traditions, chakra are those centers or 'wheels' of energy at key points along the energy channels in the body. Each chakra is thought to represent different parts of the body, both physically and emotionally. Each chakra also has a colour. Meditating on the chakra that represents an area in your life that needs reinforcement can be an effective, even life-changing form of meditation. Meditating to open and energize all the chakras is also an effective technique for freeing the body to do the work of extinguishing the negative effects of stress.

#### *The Seven Major Chakras*

While the body is filled with minor chakras, the seven major chakras exist on a line from the base of the spine to the crown of the head. The First Chakra is located deep at the base of the spine. Its colour is red. This is the seat of instinct, including appetite, the instinctual sexual urge, aggression, violence, fear.

The Second Chakra is located behind the navel or just slightly below. Its colour is orange. This is the seat of creativity, including both procreation and the deep-seated urge to create art. This is also the seat of passion.

The Third Chakra is located just behind the solar plexus in that indentation beneath your rib cage where both sides of your ribs meet. Its colour is yellow. This is the seat of action and consumption turning food into energy. Meditate on this chakra.

The Fourth Chakra is located just behind the heart. Its colour is green. This is the middle chakra of the seven, and the center of compassion, emotion and love.

The Fifth Chakra is located in the throat. Its colour is sky blue. This is the seat of communication energy. Meditate on this chakra



if you are having trouble communicating your feelings or expressing yourself, or if you have writer's block.

The Sixth Chakra is located between and just above the eyebrows. It is sometimes called the Third Eye chakra. Its colour is deep, dark blue or indigo-like the night sky, as opposed to the fifth chakra's colour of bright blue sky.

The Seventh Chakra is located at the crown of the head. This is the highest chakra, sometimes called the Thousand Petalled Lotus Chakra. Its colour is violet.

Choose a quiet spot where you are unlikely to be disturbed, and sit comfortably. Rock yourself into a straight position. The primary energy channels in your body run along your spine and into your head. If you keep your spine straight, energy can flow more easily through the chakras. Close your eyes and breathe easily.

Then, focus either on the first chakra, if you plan to move through all of them, or the chakra on which you want to focus. Imagine the chakra's colour and feel the colour pulsing in the area of that chakra. Think about what that chakra represents. Reflect on those qualities on your own life.

## 6. Imagery Meditation

Imagery meditation and visualization are meditations that use your imagination to make positive changes in your thinking. The purpose of imagery meditation is to imagine yourself in a different place (the beach, the mountains, Paris) or circumstance to effect instant relaxation. Visualization is a technique for imagining something you want (a different job, the love of your life) or a change you would like to see in yourself (to be less reactive to stress, more self-confident, perfectly organized). Imagining and visualizing have two separate effects:

1. Instant stress relief because of the positive feeling, you associate with what you are visualizing.
2. Life changes because continually visualizing something can help to bring those changes about in your life.

Even if your imagination is a little rusty, you can practice imagery meditation and visualization. It's fun! Whatever you use them for, these imagination generators are powerful stress management techniques, both the short and the long term.

Get comfortable, either sitting or lying down. Close your eyes. Take a few deep, relaxed breaths, then form a picture in your mind. Maybe it is the place you wish you could be right now, a place you visited in the past and loved, or a place you invent. What does the place look like? What do you see around you? What colours, what textures? Notice everything about the place you are visualizing.

## 7. Visualization

Get comfortable, either sitting or lying down. Close your eyes, Take a few deep, relaxed breaths, then form a picture in your mind of some kind of positive life change. Maybe it's career goal, a change in health or appearance, situation, confidence, or anything else. Keep it simple and stick to one thing. You can always tackle other areas in a separate session.

Imagine yourself in your new situation. How do you look, act or feel? How do you like being this new way, looking like this, having this job? If you like it, if it feels right, then stick with your visualization every day and imagine it with fervent and confident intention.

As you change, your visualizations may change and grow. That's fine! You may realize, for example, that as your life becomes less stressful and more rewarding, you don't really need to be financially wealthy, because you have gained emotional and spiritual wealth instead. The trick is to keep it up. The more you use your imagination, the stronger it becomes, just like a muscle.

## 8. Mindfulness Meditation

Mindfulness meditation can be practiced anywhere, anytime, no matter what you are doing. It is simply focusing on total awareness of the present moment. Anything you are doing, you can do with mindfulness.

Mindfulness meditation is easy to do as short

periods. It is tough to do for an extended time, because our minds resist staying in the present moment.

But it is a rewarding mental discipline that teaches us to cherish and relish the miracle of the present moment, no matter how ordinary. It is supremely relaxing and satisfying.

Wherever you are, you can practice mindfulness meditation by consciously making the decision to be fully aware of everything around you. Notice the impressions from all your senses—see, hear, feel, smell, taste. When your mind begins to think about something else, gently bring it back to the present moment. You may be amazed at what you notice about yourself and the world around you.

### 9. Practice prayer

Prayer is a focused, concentrated communication, statement of intention, or opening of the channel between you and divinity, whatever divinity is for you. A prayer can be a request, thanks, worship, or praise to God. It can be an intention of being thankful directed to the universe. It can be used to invoke divine power or an attempt to experience divine or universal energy directly. Many different traditions have many different modes and types of prayer. Prayer can mean whatever you want it to mean for you.

First decide to whom, to what, or toward whom your prayer is addressed. What is the substance of your prayer? Are you praying for healing for yourself or someone else? Are you praying for something you want or need? Are you praying to say thank you for everything you already have?

### Conclusion and Implication

Various social measures to deal with stress of soldiering have been implemented and efforts to improve the psychological health of troops have been undertaken in recent times. How effective have these measures been? In this background it is proposed to review the available literature on the current concepts of stress, evaluation methodologies, epidemiological trends of stress related disorders among soldiers, stress manifestations and the availed coping strategies.

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# Investigation of Causality between Institutional Investment and Indian Stock Market: An Empirical Study of FIIs and MFs

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## Abstract

*With the acceleration of reforms in India, the stock market in India has witnessed more and more of investment from institutions. It is observed many times that these investors have played a major role in causing ups and downs in the Indian stock market. The present study makes an attempt to analyze the short term and long term causal relationship between institutional investment and returns in the stock market of India. The study uses the monthly time series data on Advances to Declines Ratio (ADR) of NSE and the word institutional investment confines to foreign institutional investment and mutual fund investment. The sample period spans from April 2001 to December 2012. To achieve the objective of the study, the paper uses the empirical techniques such as Co-integration, Granger Causality Test, Variance Decomposition Analysis as a part of research methodology. The study concluded that in the long run, there exist bi-directional causal relationship between FII and Indian stock market, whereas, unidirectional causal relationship can be seen running from MF investment to Indian stock market and also from total institutional investment to NSE-ADR. In the short run relationship also FII and MF shows a unidirectional causal towards Indian stock market. All the analytical tools suggest that institutional investment leads the Indian stock market.*

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**Key Words:** *Foreign institutional investment, Mutual fund investment, Co-integration, Granger Causality, Variance Decomposition Analysis*

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## INTRODUCTION

The integration of financial markets throughout the world is seen as a measure of growing economic globalization. A crucial feature in the progress of Indian stock market during the last two decades has been an upward trend in the institutional investment, in

the form of foreign institutional investment (FII) and the domestic institutional investment (DII). An institutional investor is an investor that is registered in the country in which it is trading. The foreign institutional investors are primarily those investors who as an institution or entity invest the capital in the financial market of a foreign country. In other words, foreign

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institutional investor means an entity established or incorporated outside India that proposes to make investment in India and the domestic institutional investors with respect to India refers to Indian institutional investors who are investing in the financial markets of India. It is argued at many platforms that, the growing number of institutional investors over the years have gradually controlled the investment scenario of the stock market of India. The reason may be that they have immense funds available for investment and moreover, they move uncompromisingly from one market to another. The implication of institutional investment is evident as whenever the stock market rises, it is attributed to institutional investors' money. The mounting role of institutional investors has brought both quantitative as well as qualitative developments in the stock market such as, rising securities business, magnify the depth and breadth of the market, and also introduction of efficient pricing of the stocks (Jain, 2007).

On the other hand, it is also held that, FIIs instill tremendous volatility in the stock markets. The recent studies conducted by some financial experts on the impact of FIIs on Indian stock market like Rai and Bhanumurthy (2004), Singh (2004), Biswas (2005), Pal (2005) and Porwal and Gupta (2005) found evidences of higher volatility in the market due to the arrivals of FIIs. On the other hand, Kim and Singal (1993), Banerjee and Sarkar (2006) did not find any destabilizing impact on stock prices. Even some researchers such as S.S.S. Kumar (2000) concluded that the FIIs reduce stock market volatility.

India opened the doors of stock markets to foreign institutional investors (FIIs) in September 1992, however, the FII flows to India began in January 1993. Since then, this has become one of the main channels of international portfolio investment in India for foreigners and there has been substantial flow of portfolio investment in the form of foreign institutional investors' investment in the Indian stock market. The cumulative investment by FIIs since inception till March 2013 stands at 1,71,529 US\$mn and the net investment by mutual funds and FIIs stands at 4,50,711 and 1,68,367 crores, respectively during 2012-13 (Sebi Bulletin 2013). Accordingly,

India emerged as an attractive destination for foreign investors.

Therefore, an attempt has been made to study the dynamic relation between institutional investment and the stock market of India. The study would be of high importance from policy perspective regarding institutional investment.

The remainder of the paper is organized as follows. In section II, we summarize several stands of literature that are relevant for our analysis. We discuss a few key studies that empirically analyze the relationship between institutional investment and stock market performance. Section III gives an overview of the data and the methodology. Section IV presents results and Section V discusses the implication of results and concludes the study.

## Literature Review

A range of authors have worked on literature pertaining to impact of institutional investment on returns of stock market of various countries. But here, we will discuss few recent studies which are relevant to the Indian market.

A study conducted by Trivedi and Nair (2000) indicated that the returns and volatility in the Indian stock market were the principal determinants of FII investment inflows. They also indicated that FIIs have not been looking at the Indian markets as a destination to diversify their portfolio risk. Chakrabarti (2001) used monthly and daily data to test the Granger causality. He found that, in the post-Asian crisis period, Indian stock market performance was the sole driver of FII flows in and out of India, although reverse causality was witnessed in the pre-Asian crisis period. Similar results were obtained by Mukherjee *et al.*, (2002) on daily data from 1999-2002. The study concluded that equity returns were the most important factor in influencing the FII flows into the country and FII flows do not have significant impact on returns. Batra (2003) examined FII trading behaviour and returns in Indian equity market based on daily and monthly data. The study found trend chasing and positive feedback trading by FIIs on daily basis, but no such evidence was found on monthly basis. The study concluded that bias of FIIs do not have destabilizing impact on equity market. Gordon



and Gupta (2003) analyzed monthly data over the period 1993-2000 and found that FII flows were negatively related to the lagged stock market returns, suggesting negative feedback trading. Griffin (2004) found that foreign flows are significant predictors of returns for Korea, Taiwan, Thailand and India. Panda (2005) examined the impact of FIIs and mutual fund investments on Indian stock market by using Vector Auto regression (VAR) analysis and Granger Causality on data of NSE and BSE for the period from Oct. 2003 to Mar. 2004 and found that the returns on Indian stock market indices were more affected by the mutual fund investment than foreign institutional investment. FIIs are found to follow positive feedback strategy and to have return-chasing tendency. D'souza (2008) studied the difference between the capital flows in India as compared to other emerging market economies and noted that capital flow in India has been associated with a buoyant stock market and a rise in investment and interest rates in the economy.

Babu and Prabheesh (2008) found bi-directional causality between FII and stock returns. However, FII flows were more stock return driven. Takeshi (2008) reported unidirectional causality from stock returns to FII flows in India where as the reverse causality works only post-2003. Thenmozhi and Kumar (2009) examined the interaction between mutual funds and security returns. The study concluded that mutual fund flows were significantly influenced by returns but returns were not influenced by mutual fund flows. Stigler, Shah and Patnaik (2010) estimated a VAR involving five variables: net FII investment, the Nifty index, the S&P 500 index, the ADR premium index and the INR/USD exchange rate. The causality test indicated that a shock to net FII flows does not cause the Nifty index returns, but the reverse causality does hold. Moreover, positive shocks to the exchange rate, ADR premium and S&P 500 affected net FII flows.

Thus, most of the existing studies performed in Indian context found that the return has a significant and positive impact on the FIIs, but some also agree on bidirectional causality. Therefore, the empirical results have been mixed and existing literature is inconclusive on

issue of causality between institutional investment and stock market of India.

### Objective of the Study

The present study aims to analyze the causality relationship in trading behaviour of foreign institutional investment, mutual fund investment and total institutional investment with respect to stock market of India. The paper will shed light on the degree of integration between the understudy variables and how they affect each other. The specific sets of objectives of the study are as follows:

1. To determine the co-integration relationship between the variables i.e. Advances to Decline Ratio (ADR) of National Stock Exchange (NSE) of India and the institutional investment in form of foreign institutional investment, mutual funds and total institutional investment.
2. To find out the causality and thereby unravel the nature of causal relationship that exists between the variables, i.e., is it unilateral or bilateral.

### Data and Methodology

To achieve the objective of the study, the study uses the monthly time series data on Advances to Declines Ratio (ADR) of NSE. The ADR indicates the breadth of the stock market and captures the direction of entire market in unambiguous manner. Therefore, we use ADR for empirical analysis instead of returns. The institutional investment is studied for foreign institutional investment and mutual funds as they are the most important constituent of institutional investment in the category of foreign and domestic institutions respectively. Further, the institutional investment is captured by taking monthly purchases to sales ratio of FIIs and similarly for MFs. Total institutional activity is measured by taking monthly combined purchases of FIIs and MFs to monthly combined sales of FIIs and MFs. The sample period of the study spans from April 2001 to December 2012. The data on monthly FII flows and advances/declines have been collected from the archives of SEBI.

With a view to accomplish the stipulated set of objectives of our study, the formal investigation is carried out by examining the stochastic properties of the variables by using Unit Root Test to verify the stationarity of the variables. If the variables don't have unit root problem then Granger causality can be estimated.

### Stationary and Order of Integration

The first step is to determine the stationarity of the series in order to avoid spurious regression. Unit roots are conducted to verify the stationary properties of the time series data. A series is said to be integrated of order  $d$ , denoted  $I(d)$ , if it has to be differenced  $d$  times before it becomes stationary. If a series, by itself, is stationary in level without having to be first differenced, then it is said to be  $I(0)$ . We use Augmented Dickey-Fuller (ADF) (Dickey & Fuller, 1979) test to know whether the variables are stationary. Consider the equation:

$$\Delta X_t = \alpha_1 + \alpha_2 t + \beta X_{t-1} + \sum_{i=1}^k \gamma_i \Delta X_{t-i} + \mu_t \quad (1)$$

Where  $\Delta X$  is the first difference of  $X$  series,  $\alpha_i$  is a constant term,  $t$  is a time trend,  $\mu$  is the white noise residual term of zero mean and constant variance and  $k$  is the lagged values of  $\Delta X_t$  which are included to allow for serial correlation in the residuals.

### Co-integration Test

If all variables are found to be  $I(d)$ , then the next step is to test for the existence of a co-integration between them. This is achieved by using Johansen-Juselius (1990) co-integration techniques. The Johansen-Juselius uses the maximum likelihood approach. This method allows the empirical determination of the number of co-integrating relations and produces maximum likelihood estimators of the parameters of these relations. Two test statistics namely, trace test statistic and the maximum eigenvalue test statistic are used to identify the number of co-integrating vectors.

### Granger Causality Test—Error Correction Model

If the series are found co-integrated, there will exist an Error Correction Model (ECM)

including Error Correction Term (ECT) obtained from the relevant co-integration regression. Engle and Granger (1987) have shown if the variables are integrated of degree  $I(1)$  and are co-integrated then either unidirectional or bi-directional Granger causality must exist in at least the  $I(0)$  variables. If the variables are found co-integrated, the error correcting models are defined as in equations given below:

$$\Delta X_t = \alpha_1 + \sum_{i=1}^m \beta_{1i} \Delta X_{t-i} + \sum_{i=1}^m \gamma_{1i} \Delta Y_{t-i} + \delta_1 ECT_{t-1} + e_t \quad (2)$$

$$\Delta Y_t = \alpha_2 + \sum_{i=1}^m \beta_{2i} \Delta Y_{t-i} + \sum_{i=1}^m \gamma_{2i} \Delta X_{t-i} + \delta_2 ECT_{t-1} + e_t \quad (3)$$

The Error Correction Terms ( $ECT_{t-1}$ ) are the stationary residuals from the co-integration equations. The inclusion of error correction terms in the above equations introduces an additional channel to detect causality. Given such a specification short term and long term causality can be tested. For instance, in equation 2, the null hypothesis that  $Y$  does not Granger cause  $X$  is rejected if not only  $\gamma_{1i}$  are jointly significant from zero but also if  $\delta_1$  is significant. The error correction models allow for the fact that  $Y$  Granger causes  $X$  as long as the coefficient of the error correction term is significant even if  $\gamma_{1i}$  are not jointly significant. ECT is used for correcting disequilibrium and testing for long run and short run causality among co-integrated variables. The significance of  $\gamma_{1i}$  terms implies  $Y$  Granger causes  $X$  in the short run and significance of ECT coefficient implies  $Y$  Granger causes  $X$  in the long run.

### Variance Decomposition Analysis

Once the VECM model is estimated, then we employ Variance Decompositions (VDCs). The analyses allow us to investigate the behaviour of an error shock to each variable on its own future dynamics as well as on the future dynamics of the other variables in the VECM system. VDCs is used to detect the causal relations among the variables. It explains the degree at which a variable is explained by the shocks in all the variables in the system (Mishra, 2004).

### EMPIRICAL RESULTS

The empirical work based on time series data assumes that the underlying time series is



stationary. The Augmented Dickey-Fuller (ADF) test has been employed to test whether the series are stationary or not. Table 1 shows that there is no unit root and the null hypothesis of non-stationary data cannot be accepted as the absolute value of calculated ADF test statistic is greater than its critical value at 5% level of significance in all the five series. It indicates that the integration of all series is of order  $I(0)$ . The implication about stationarity of data series reveals that the data holds good for further research like application of correlation, regression, co-integration and causality tests.

After having confirmed that the integration of the series is of the same order, the next step is to examine whether the two series are co-integrated. Co-integration analysis is used to determine the existence of a stable long run relationship that reveals the extent to which two series/markets have moved together towards long run equilibrium. We consider Johansen and Juselius (1990) co-integration approach for this purpose. Johansen's co-integration test is more sensitive to lag length employed. Here, Akaike Information Criterion (AIC) is used to select the optimal lag length and all related calculations have been done embedding that lag length.

The results of Johansen and Juselius co-integration relationship between various variables i.e. foreign institutional investment,

**Table 1.** Augmented Dickey-Fuller Unit Root Test

Variable	ADF Test Statistics at Level	
	Constant	With Constant & Trend
MF	-9.2856* (0)	-9.4928* (0)
FII	-7.9602* (0)	-8.0322* (0)
Total Institutional Investment	-9.5178* (2)	-9.5522* (2)
ADR - NSE	-4.2764* (0)	-4.2597* (0)

\* denotes statistically significant at 1% level.  
*Note:* The optimum lag length is indicated within parenthesis determined by Schwarz criteria. The critical value of ADF statistics are -4.0265 and -3.4429 at the 1% and 5% level of significance respectively.

mutual fund investment, total institutional investment and ADR-NSE are presented in Tables 2.1 to 2.3. The maximum eigenvalue and trace statistics are used to interpret whether the null hypothesis of  $r = 0$  is rejected at 5 % level of significance. The rejection of null hypothesis implies that there exists at least one co-integrating vector which confirms a long run equilibrium relationship between the two variables. The null hypothesis of  $r$  co-integrating vectors is given in column 1 of each above mentioned tables. The result of all the bivariate co-integrating vectors discloses the rejection of null hypothesis of no co-integrating vectors under both the trace statistics and maximal eigenvalue forms of test. This indicates that variables under study are co-integrated with each other and, therefore, they have long term relationship.

Further, to determine as to which variable causes the other, the Error Correction Model (ECM) is used to investigate short run and long run causality. Here, the causal relationship can be gauged by examining the statistical significance and relative magnitude of error correction coefficient. The ECM takes into account the lag term in the technical equation that invites the short term adjustment towards the long run. In other words, the error correction coefficient acts as an evidence of direction of causal relation and reveals the speed at which discrepancy from equilibrium is corrected or minimized. The justification of estimating error correction term is to know which sample variable plays a crucial role in lead lag relationship and information flow.

The results of error correction model are presented in Tables 3.1 to 3.3. The structure lag is chosen on the basis of Vector Auto Regression (VAR) model by using Akaike's minimum Final Prediction Error (FPE) criterion. To make consistency, the same lag length is chosen as for co-integration test. The results reveal that bi-directional causality exists between FII and NSE-ADR (Table 3.1). This is based on the statistical significance of the coefficient of error correction term (ECT). The ECT represents the long run impact of one variable on the other while the change of the lagged independent variable describe the short run causal impact. FII granger

**Table 2.1.** Johansen Co-integration Test between FII and NSE

r	Eigen value	Trace Statistics (5%)	Critical value	Max. Eigen Value	Critical value (5%)	Result
r = 0	0.3767	95.325*	15.49	15.495*	14.26	Co-integrated
r = 1	0.1959	30.087*	3.841	3.842*	3.84	

\* denotes statistically significant at 5% level

**Table 2.2.** Johansen Co-integration Test between MF and NSE

r	Eigen value	Trace Statistics (5%)	Critical value	Max. Eigen Value	Critical value (5%)	Result
r = 0	0.3841	111.26*	15.49	66.89*	14.26	Co-integrated
r = 1	0.2749	44.37*	3.84	44.37*	3.84	

\* denotes statistically significant at 5% level.

**Table 2.3.** Johansen Co-integration Test between Total Institutional Investment and NSE

r	Eigen value	Trace Statistics (5%)	Critical value	Max. Eigen Value	Critical value (5%)	Result
r = 0	0.3836	102.416*	15.49	66.792*	14.26	Co-integrated
r = 1	0.2275	35.625*	3.841	35.625*	3.84	

\* denotes statistically significant at 5% level.

causes NSE-ADR and NSE-ADR causes FII in the long run as ECT are significant. This shows the positive feedback effect between FII and NSE-ADR. Moreover, the error correction term of NSE-ADR is greater in magnitude that of FII, which means that NSE makes greater adjustment in order to re-establish the equilibrium. In other words, FII leads the NSE-ADR. However, in the short run, there is evidence of uni-directional causality between these two variables. Causality runs from FII to NSE-ADR as estimated coefficient in respect of lagged values of FII is statistically significant.

The result of Granger causality between MF and NSE-ADR presented in Table 3.2 reveals uni-directional causality between the variables in the long run. NSE does not granger cause MF in the long run as ECT is insignificant. But on other hand, MF granger cause NSE-ADR as indicated by statistically significant ECT. This indicates that as the MF fluctuates, it causes fluctuations in NSE stock market and the

fluctuations in NSE do not affect the MFs. The comparable results are also valid for short term relationships between the understudy variables. The estimated coefficient of lagged MF has negative and significant influence on NSE-ADR, thereby indicating that, MFs make investment in the Indian stock market in response to decreasing returns. Thus, there exists uni-directional granger causality between the variables in short run as well as long run.

As regards to causality between total institutional investment and NSE-ADR (Table 3.3) the result indicates uni-directional causality in the long run. NSE-ADR does not granger cause total institutional investment in the long run whereas total institutional investment granger cause NSE-ADR as evidenced by the statistically significant ECT. In the short run, causality runs neither from NSE-ADR to total institutional investment nor from total institutional investment to NSE-ADR as the estimated coefficients in respect of lagged values



**Table 3.1.** Granger Causality Test with Error Correction Term between FII and NSE

Particulars	$\Delta$ FII (-1)	$\Delta$ NSE (-1)	ECT
$\Delta$ FII	-0.3517 (-4.3800)*	0.0101 (0.6492)	0.0050 (2.2425)*
$\Delta$ NSE	0.7871 (1.7316)*	0.0785 (0.8907)	0.1126 (8.9502)*

\* denotes statistically significant at 5% level.

**Table 3.2.** Granger Causality Test with Error Correction Term between MF and NSE

Particulars	$\Delta$ MF (-1)	$\Delta$ NSE (-1)	ECT
$\Delta$ MF	-0.3889 (4.7006)*	1.94E-05 (0.00085)	0.00312 (0.3629)
$\Delta$ NSE	-0.5176 (1.6038)**	0.1305 (1.4728)**	0.3004 (8.9729)*

\* and \*\* denotes statistically significant at 5% level and 10% level.

**Table 3.3.** Granger Causality Test with Error Correction Term between Total Institutional Investment and NSE

Particulars	$\Delta$ Total (-1)	$\Delta$ NSE (-1)	ECT
$\Delta$ Total	-0.4104 (5.0158)*	0.0048 (0.3633)	0.0133 (0.9610)
$\Delta$ NSE	-0.3563 (0.6466)	0.1187 (1.3145)*	0.8401 (8.9831)*

\* denotes statistically significant at 5% level.

of independent variables turn out to be statistically non-significant.

Thus, it can be inferred from the estimating error correction terms that FIIs, MFs, and total institutional investment leads the NSE-ADR and thereby, play a crucial role in providing direction to the Indian stock market.

Further, to supplement the Granger Causality Test results, Variance Decomposition Analysis is performed. The variance decomposition analysis measures the percentage of forecast error of a variable that is explained by another variable within short run dynamics

and interactions. It indicates the relative impact that one variable has upon another variable within VECM model. This analysis helps in assessing the economic significance of these impacts as the percentage of the forecast error for a variable sum to one.

Table 4.1 shows the result of variance decomposition of FII and NSE-ADR at 1, 2, 5 and 10 month horizon. In case of bi-variate modelling of FII and NSE-ADR, the results reflecting the information share shows that the FII explains 97% of its own forecast error variance at variance period 2, whereas NSE explains only 3% of FII variance. On the other hand, NSE explains 95% of its own forecast and remaining 5% is explained by FIIs. Thus, 3% to 5% variability of FIIs is witnessed by NSE innovation over the sample period of ten months and moreover, the variance decomposition of NSE also depicts almost parallel results regarding variability due to FIIs, it is also observed that variations in variables are predominantly attributed to their own variations which decline gradually over the increase in time horizon and variability in the variables due to innovations in other variable increases with time. Moreover, as more information flows from FIIs to NSE, therefore, the price changes of NSE can be considered due to FIIs. This indicates that FII defines NSE more than the NSE defines the FIIs. In other words, the information share depicted by variance decomposition confirms the dominant role of FIIs in information dissemination, which confirms that FII causes NSE in the short run period. These results are consistent with the causal relationship.

The results of variance decomposition analysis of MF and NSE-ADR (Table 4.2) also depicts that 5% to 7% variability of NSE is accounted by MF innovations and negligible i.e. less than 1% variability of MF can be attributed to innovations in NSE over the sample period. Accordingly, the MF explains NSE more than NSE explains MF. Further, with regard to total institutional investment and NSE-ADR (Table 4.3), the range of variability of NSE because of total institutional investment falls in the range of 8% to 12% which indicates that total institutional investment defines NSE more

**Table 4.1.** Variance Decomposition of FII and NSE

Period	Variance Decomposition of FII			Variance Decomposition of NSE		
	S.E.	FII	NSE	S.E.	FII	NSE
1	0.2241	100.00	0.0000	1.2686	2.4226	97.5774
2	0.2679	96.8752	3.1248	1.2843	4.8059	95.1941
5	0.3882	95.1756	4.8244	1.2941	5.0488	94.9512
10	0.5294	94.5307	5.4693	1.2947	5.1255	94.8745

**Table 4.2.** Variance Decomposition of MF and NSE

Period	Variance Decomposition of MF			Variance Decomposition of NSE		
	S.E.	MF	NSE	S.E.	MF	NSE
1	0.3293	100.00	0.0000	1.2847	5.2950	94.7049
2	0.3850	99.8647	0.1353	1.2869	5.5001	94.4998
5	0.5670	99.8576	0.1423	1.3030	6.3088	93.6911
10	0.7751	99.8502	0.1498	1.3109	7.4407	92.5592

**Table 4.3.** Variance Decomposition of Total Institutional Investment and NSE

Period	Variance Decomposition of Total Institutional Investment			Variance Decomposition of NSE		
	S.E.	Total Institutional Investment	NSE	S.E.	Total Institutional Investment	NSE
1	0.1916	100.00	0.0000	1.2905	8.0229	91.9770
2	0.2219	99.4840	0.5160	1.2939	8.4995	91.5005
5	0.3246	99.1554	0.8446	1.3134	9.7906	90.2094
10	0.4422	99.0331	0.9669	1.3326	12.3459	87.6541

than NSE defines total institutional investment. On comparing the information flow of FII and MF with NSE, it can be observed that MF has more impact on Indian stock market than FIIs.

### Discussion and Conclusion

The paper empirically investigates the co-integration and causal relationship of Indian stock market with FII, MF investment and total institutional investment. The objective behind the study was to examine the relationship between investment behaviour of well-informed professional investors and the sentiments of the stock returns in the Indian stock market. The analysis done in the paper is concluded with the results that there exist co-integration between all the variables i.e. FII, MF investment, total

institutional investment and NSE-ADR. The existence of co-integration describes the dependency of variables and it indicates that the variables share common long-term information with each other. Further, the results of the Granger causality test with ECT indicated that there exists bi-directional causal relation between the NSE-ADR and FIIs. This implies that once the price relationship of FIIs and NSE-ADR deviates away from the long run co-integrated equilibrium, both variables will make adjustments to re-establish the equilibrium condition. Moreover, the results also reveal that FIIs play a crucial role in lead lag relationship and information flow towards NSE-ADR. The short run causality also runs from FIIs to NSE-ADR. Gordon and Gupta (2003) and Babu and



Prabheesh (2008) also agree on bi-directional causality stating that foreign investors have the ability of playing like market makers given their volume of investment.

The causality between MF and NSE-ADR presents uni-directional causal relationship running from MF to NSE-ADR for long as well as short period. However, the negative and statistically significant estimated coefficient of lagged stock market in the short run indicated that the MF investors buy when the prices are low and sell after prices increases. Whereas, FIIs with positive and statistically significant estimated short term coefficient indicated that they make investment in the market in response to the increasing returns. Thus, this contrarian behaviour of MF provides stability to the stock market and curbs the volatile nature of FIIs. Moreover, there is unidirectional causality between total institutional investment and NSE-ADR in the long run. The result of VDC also suggests that institutional activity has significant capacity to influence the Indian stock market. However, comparatively, MFs have more impact on Indian stock market than FIIs. S.S.S. Kumar (2006) also viewed that Indian mutual funds are leading the pack and are giving direction to the market.

Thus, the FII and MF investment have significant impact on the market direction in the short run as well as long run. Therefore, the forecasts about market direction can be improved by using institutional activity as an independent variable. Thus, it can be interpreted that Indian stock market is in the control of institutional investors as the FII, MF investment and total institutional investment leads the stock market. The regulatory authorities should provide more support and strength to domestic mutual funds and should make strict norms for the FIIs so that they cannot induce volatility in the share market. According to Biswas (2005), FII influences the share price movements in Indian stock market but their role in the development of Indian stock market is still questionable. Individual investors can track the Indian mutual funds as they bring stability in the system. The study has further scope of using daily data or intraday investment data to analyze the investment behaviour of institutional investors.

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# Training for the Future

Jagbir Singh Dhull\*

## Abstract

*"In the 21st century, a new society is emerging where knowledge is the primary production resource instead of capital and labour. For a nation to attain the stage of a knowledge society, it should be able to effectively deal with knowledge creation and knowledge deployment."*

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**Keywords:** *Capital and labour, Knowledge society, Seployment, Knowledge creation*

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## INTRODUCTION

With advancement of technology, the training methodology in all the educational institutions is undergoing total transformation. The Indian Army is also transforming from a manpower intensive force to a modern, technology-savvy and equipment-oriented force. With the availability of plethora of hi-tech equipment in our country, it is imperative that our students are in sync with the emerging technologies. At present, the introduction of these new generation equipment has not only enhanced the learning capabilities of the educational institutions, but have also provided the students more reliable equipment. Reliability as such is a function of a number of things including cost. The reliability of an equipment can be enhanced, but this leads to increase in the costs. The exponential increase of cost for enhancing reliability beyond certain optimal level is uneconomical. Cost of 100% reliability may be prohibitive. Accordingly, in all maintainable equipment it is prudent to accept lower reliability with an appropriate close

engineering support. There is a need of technicians for providing proper engineering support to equipment. Hence there is dire need to improve the training of users and technicians.

## PRESENT STATUS

All the educational establishments should ensure that the syllabi for courses are revised in such a manner that the students achieve the desired terminal behaviour after culmination of these courses. The syllabus has to keep pace with advancements in the field of study and changes in the organization. There is a need to upgrade course curriculum, so as to cater for their intellectual development and honing of skills. There is an urgent need to synchronise our training so as to meet the requirements of the job. For the efficient functioning of the organization, the substantial improvement of our junior leadership is a prerequisite. The human resource development through proper training is to be addressed at all levels of hierarchy. Unless our soldiers are trained well, the success in battle cannot be assured. In order

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to perform optimally in future wars, it is necessary to focus on our training framework so that it forms the bedrock for a well-trained army. The creation of Strategic forces Command and Army training Command are the steps in the right direction.

The present training methodology lays more emphasis on the performance in the tests rather than on enhancing skills and knowledge. As a result, certain training institutions focus more on gradings obtained thereby losing sight of the primary aim of a course. The syllabus has to be revised periodically so that it is in sync with latest advancements. Our training institutes must cater for continuous upgradation of training curriculum so as to keep pace with advancements.

### FUTURE SCENARIO

Indian Parliament has enacted a legislation making free and compulsory education a Right of every child in the age group 6-14 years which has come into force from 1st April, 2010. The Right of Children to Free and Compulsory Education Act 2009 and the inclusion of Article 21-A in the Constitution of India has far reaching implications for elementary education and for the implementation of Sarva Shiksha Abhiyan, in the years to come. During the XII Five-Year Plan 2012-2017, Govt. of India intends to achieve an additional enrolment capacity of 10 million students in higher education including 1 million in open and distance learning so as to raise the country's Gross Enrolment Ratio (GER) in Higher Education from 18.1% at present to 25.2% by 2017 and to reach the target of 30% GER by 2020. The vision of the XII Five-Year Plan is faster, more Inclusive and sustainable Growth. The monitorable targets for education specified by Ministry of HRD are:

- (a) Mean Years of Schooling to increase to seven years by the end of Twelfth Five-Year Plan.
- (b) Enhance access to higher education by creating two million additional seats for each age cohort aligned to the skill needs of the economy.
- (c) Eliminate gender and social gap in school enrolment (that is, between girls and boys, and between SCs, STs, Muslims and the rest

of the population) by the end of Twelfth Five-Year Plan.

- (d) Under Employment, the target set to generate 50 million new work opportunities in the non-farm sector and provide skill certification to equivalent numbers has a critical bearing on education sector.

Indian National Defence University (INDU) is a proposed university of defence, which will be established at Binola near Gurgaon. The university is expected to be functional by 2018-19. The Prime Minister Dr. Manmohan Singh laid the foundation stone of the Indian National Defence University on May 23, 2013. The campus will have an area of 200 acres. INDU aims to provide knowledge-based higher education for management of the defence of India to the military leadership and other concerned civilian officials. It will also keep them abreast of the emerging security challenges via scholarly research and training. It will prepare officers for high level leadership as well as staff and policy responsibilities. The think tanks of the university will be responsible for providing inputs for policy formulations. The University will be instituted by the Act of the Parliament. The Defence Minister will be the Chancellor. The institute will be headed by a President (who will be a three star serving General or equivalent officer with C-in-C status) and a Vice-President, who will be a civilian. The university is being planned on the lines of IITs and IIMs. One-third of the students of the university will be from armed forces and remaining 33% would be drawn from other civilian government agencies and the police. The teaching faculty will comprise of both military personnel and civilians in the ratio of 1:1.

The Indian Army is likely to face increasing challenges to train the soldiers in the coming years. The future battlefield will require a versatile mix of mobile, networked future soldiers that will leverage mobility, protection, information warfare and precision fire to conduct effective operations across the spectrum of conflict. The Army's future soldier would focus on lightweight, overwhelmingly lethal and fully networked individual soldier system. It must have mission capable weapon system, head-to-toe protection, reliable communication



system and soldier worn power sources to achieve peak performance level.

As defence spending shrinks, the pressure to reduce cost of training will also continue to increase. These will force all institutions to restrain their expenditure on training. At the same time, continuing technological advances are expected to increase skill requirements and drive up the life cycle costs associated with equipment. Such trends will force us to modify its customary methods of training. In the environment of shrinking training resources, greater constraints and increasing training requirements, we will have to find new methods of training that can maintain effectiveness while reducing the resources required for training. Some of the training concepts and strategies required are as under:

### Distributed Training

It envisages a reduction in the length of institutional training courses, accompanied by increased individual training at soldier's stations using paper-based instructions, video recordings, computer based training and interactive video.

### Device-based Training

It envisages the use of advanced technologies, including training aids, devices, and simulators to reduce equipment and ammunition usage during training at institutions, combat training centres and home stations.

The Indian educational institutions are rapidly transforming themselves to meet the new threats and challenges of the 21<sup>st</sup> century. They are now using information technology as enabler in the transformation effort. The operational demands on signal and information technology are increasing with the introduction of new systems designed to operate over an expanded battle space that includes operations other than war to strategic warfare. The present stress or the digitization are in the following areas:

- (a) Software and Hardware Transformation: This will involve transformation of software and hardware which is currently in use for

training aids e.g. black boards being replaced by interactive boards, power point presentations and modern classroom concepts with e-learning facilities.

- (b) Life Long Learning: This calls for continuous training of all individuals at various stages of life on new technologies and equipment.
- (c) Personnel Management: The roles of leaders, operators, maintainers, and network administrators of communication based systems are becoming increasingly critical to battlefield success, as the force continues its transition to increased reliance on latest information age technologies.

### Learning Process

The learning involves acquisition of knowledge to a greater or lesser degree depending on what is to be learned. Knowledge by itself is not enough unless the learners understand how to use it. Without thinking about what we are learning, much of the knowledge we gain is of



### Dale's Cone of Learning



"Retention is best when the learner is involved." - Edward Scannell

Fig. 1. Learning processes

little use and is most likely to be forgotten quickly. We tend to focus our efforts on learning new skills to perform an activity successfully. Competency can be described as a combination of knowledge, skill and attitudinal aspects. The learning process and Dale's cone of learning are depicted as under:

### Recommendations for 'Training for the Future'

Guiding Principles: The courses at educational institutions should be such that they induce mental agility and vigour. Their mission should be to produce problem solvers by providing technical skills and confidence for taking on the vexing technical problems. There is an urgent need to resort to necessary course correction. To achieve this, the following guiding principles are proposed:

- (a) Systems Approach to Training (SAT). Adoption of SAT, use of computer based training and simulators should form the backbone of training.
  - (b) Training standards and methodologies need to be developed after a thorough job analysis.
  - (c) Terminal, learning and enabling objectives should be defined at the outset and should not be changed in between.
  - (d) Emphasis should not only be on basic training but also on advanced training. To achieve this, we may consider all training of a particular discipline at selected centre of excellence.
  - (e) Improve the accountability system at all levels, we must put in place a system "You get what you train".
  - (f) Have the best possible training aids and infrastructure to make training a meaningful and enjoyable experience.
  - (g) Training should be regularly validated and follow up training conducted to make up for shortfalls.
  - (h) Avoid the dictum "Everyone trained for everything every time", rather it should be "Train to specialize for a particular job".
  - (j) Over congestion of training facilities should be avoided at all costs.
- 'On Demand' Training: The training should be delivered 'on demand' and it should cater to knowledge building, skill building and skill integration. The various learning approaches being implemented by IBM are as under:
- (a) Work-Embedded Learning (Contemporary Approach): Learning is delivered to the employee at the exact moment of need within the context of the work task. Employees are provided with learning and guidance that are targeted at the work process level, enabling them to perform their work more effectively and, thereby, increasing productivity. This is learning that is embedded in real-time workflow. The initiatives such as pod casts, blogs and wikis, e-learning modules, books on 24x7 are all part of work embedded learning approach
  - (b) Work-Enabled Learning (Contextual Approach). The workplace is used as the learning environment. Work-enabled learning is achieved through meaningful interactions that happen directly within the context of work. This approach focuses on providing/structuring activities and guidance to influence the learning required for the performance at work. Throughout this approach, employees are guided or coached to maximize the work content in order to develop the expertise that is critical for their roles. Initiatives such as mentoring, career guidance, job shadowing, stretch assignments are all part of work enabled learning.
  - (c) Work-Apart Learning (Classical Approach). This is traditional training, for which employees leave the work environment to learn. Learning is, therefore, removed from the action of doing work. This approach prepares employees to incorporate the learning into their work at some point in the future.
- Self Learning Teams (SLT): The participants are formed into teams comprising of five to seven members in each team, who facilitate each other's learning. The learning gets enhanced by SLTs as compared to the classroom sessions/trg, as depicted by the following diagram:



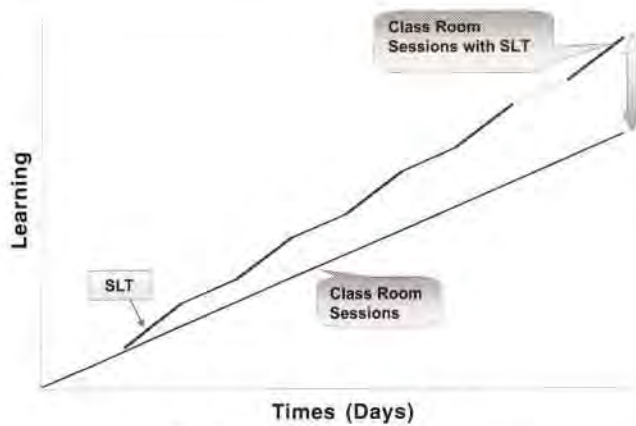


Fig. 2. Work-Embedded learning

**Training of Trainers:** The training of trainers is the most important cog in the wheel of training for the future. The level of training imparted to the trainers needs to be of a much higher level than that being imparted by them. Accordingly, they need to undergo training modules which cover advanced concepts. Adequate reference material on the subject in the form of precis, handouts and books should be available. In addition, instructor notes on all subjects should be regularly available. Trainers are always free to include their own material and do their own interpretation. Every module should be configured to the training needs of the students.

**Focus on Method than the Content.** It is not only the content which makes a course successful, but also the way it is conducted. The methodology is very important. In essence the focus on method involves the following:

- (a) Emphasis on the 'bottom-up' rather than a 'top-down' approach.
- (b) A small amount of theoretical knowledge combined with a lot of practical work.
- (c) A lot of emphasis on student-contribution and assimilation.

The training of trainers involves five distinct steps which are as follows:

- (a) All activities should also include the trainers' personal experience along with the relevant theory.
- (b) Presentation of the same should be interjected with the trainers' personal experiences which can be assimilated with ease.

- (c) Case should be studied and presented as applicable.
- (d) Discussion of the above exercises after necessary feedback has been obtained.
- (e) The habit of self-study and solving assignments to be inculcated such that the mind of the trainers and trainees is actively involved in generating new ideas and solutions.
- (f) And finally, what will really matter is to expose the man to the challenges of the tasks in hand, to make him realize the necessity of taking timely decision inspite of lack of adequate information. It is this simulated act which will bring out his responses and help the trainer correct the training methodology.

**Teaching Aids:** Effective teaching aids are a must especially in technical or equipment oriented training. An ideal mix of traditional and modern teaching aids shall form the basis of training for the future. The teaching aids can reinforce whatever ideas, facts or skills have already been learnt by the students. The user friendly and interactive teaching aids help to remove the anxiety, fear, boredom or any other complex feeling which the students may develop while learning their subjects of study. Modern teaching aids are very helpful in this respect because they use the play way method and make teaching like playing some games. The use of graphics, audio and visuals in the modern training aids leave an imagery of the lessons in the minds of the students. The trainee should also know how to handle a training aid. For eg. having an 'interactive board' in every class may only act as a 'force multiplier' once every trainee knows how to handle.

The usual traditional teaching aids are blackboards, textbooks, charts, pictures, posters, worksheets, science lab apparatus and materials, models, crossword puzzles, quizzes, dictionaries, encyclopaedias and reference books. These traditional teaching aids have limited relevance now. In future 3D printing is likely to capture the imagination of people of all ages, especially for design learning.

The modern teaching aids are quite adaptive.

The modern teaching aids may include computers, Internet surfing, laptops, electronic notebooks, e-readers, computer educational games, online dictionaries, online encyclopedias, picture dictionaries, talking dictionaries, online tests, online e-books, audio/ video teaching aids, PowerPoint slides, lessons relayed on radio/ TV, educational DVDs and interactive boards/ smart boards.

Computer as a Enabling Tool in 'Training for the Future': Computers have become the most important learning aids of the modern times. Today's education is considered incomplete without computers. These can be in various forms like desktops, laptops, notebooks, high-end mobiles and e-readers. Adequate exposure to hand held devices is essential. The modern army is today gradually becoming tech-savvy and the soldier's equipment is getting miniaturized and digitalized. Therefore, it is imperative that our training covers the important facets of exposure to tablets/GPS/mobile telephony so as to help trainees gain confidence of using them under stress and strains. Some additional points to be considered are:

- (a) Introduce system of submitting homework/ assignments on computers with dedicated login/password.
- (b) Visit to major industries where state of art equipment is used to manufacture defence equipment so as to give technical exposure.
- (c) The availability of periodicals/journals in library.
- (d) Dynamic training aids like simulators/ virtual training rooms
- (e) Capsule courses at original equipment manufacturers' locations for select group of trainees who do well in their courses so as to make a core resource group.
- (f) Subscription to e-learning packages of various firms like TATA to give multi-dimensional exposure to trainees.
- (g) Interact and compete with students of other training establishments to gain exposure.
- (h) Ensure availability of proper diagnostic tools/software.

Role of Power Point Slides in Classrooms: The Power Point presentations serve a very important role in the modern education. If a teacher is really interested to learn and use this media to teach his or her students, he can do so in a very short period of time. The entire lessons of the students can be incorporated in PowerPoint slides and then can be taught to them by interpolating sounds/animations making the lessons very interesting to the students. There is no need to cover the wall with a fixed electronic white board which will also need an overhead projector to run it in addition to a computer. This also reduces the operating costs which are very heavy.

Interactive White Board: Interactive electronic white boards known as smart boards are the latest tools for modern teaching. These need a computer, an overhead projector and preloaded educational software.

Online Dictionaries, Encyclopaedias, Picture Dictionaries, Talking Dictionaries, Online Tests. The boom of learning opportunities through Internet has spread like a wildfire among the youth of today. Many students are becoming Internet-savvy. This is because the Internet offers a multitude of learning opportunities through thousands of websites. There are free online dictionaries, free online encyclopedias, picture and talking dictionaries. Many websites offer online tests for practice to the students. There are a lot of learning videos available on several websites. Online tests while being a smart option also save time in evaluation thereby keeping the trainer more free for preparing for the next class. Use of mobiles as learning gadgets is likely to increase exponentially. Suitable mobile applications are likely to be developed shortly.

Usage of Modern Classrooms for 'Training for the Future': The modern classroom is a blend of traditional learning methods, which enables participants to learn what they need, when they need it, with the ability to put that knowledge and skills to use quickly. Classes are a mixture of lecture, lab and Question/ Answers. Practical laboratories reinforce learning objectives and utilize vendor-authorized courseware. A dedicated certified instructor guides participants through their



customized learning curriculum, providing one-on-one mentoring.

Modern Classroom Benefits: Some benefits of modern classrooms are as follows:

- (a) Minimise the difficulty of scheduling trainers in case they are out for other duties. Flexible scheduling allows learning to occur one day at a time on non-consecutive days. No course cancellations make it easier to plan and trainees get the skills when they are needed.
- (b) Lessen the impact of having trainees away on training. Individual learning plans take into account previously acquired knowledge and skills. Students can learn skills specific to their job requirement.
- (c) More effective learning using modern teaching aids.

Modern Classroom Benefits for the Trainees: The benefits for trainees are as follows:

- (a) Flexibility: Flexible daily scheduling/ learning enables us to start any class any day. The participants learn when their schedules and workplace demands.
- (b) One-on-one Instruction: No hesitation over asking "dumb" questions in a group. The mentors are certified instructors, providing assistance with lab work, and the guidance to help achieve learning and certification objectives. The mentor is the personal learning coach.

Virtual Classroom: Virtual Classroom e-Learning delivers the same content and labs as the classroom, with a live instructor, in real time, via the Internet. It's completely interactive with the student talking to the instructor and the peers. The benefits of virtual classroom e-learning are as follows.

- (a) Save time and money by training from multiple locations.
- (b) Learn from the convenience of the desktop.
- (c) Interact with peers and expert instructors.
- (d) Support informal high quality learning.
- (e) Gain high-quality instruction for a geographically distributed workforce.

- (f) Get hands-on experience.

E-Learning: E-learning offers training through Web or from the hard-drive of the computer or from the organisation's own internal network (Intranet). E-learning may use any of the media in training using Information Technology but the only difference here is that e-learning goes one step further and adds human support through online tutors, thereby extending the scope of what can be effectively taught into many new subject areas. Lessons can be taken anywhere anytime using multimedia i.e. a combination of text, graphics, sound and animation. These can be delivered to the learner via various means such as the Computer (PC), PDA, mobile phone and TV. Further, e-learning can be classified into formal lessons, which are structured, and informal means e.g. chat board, discussion board, e-mail, etc. We need to leverage social networks like Facebook and Google+ to make training more effective. Online learning content and strategies are showing up in classrooms nationwide. Digital content is replacing textbooks and much of it was initially used in formal or informal learning online. Online and blended learning have paved the way for systems where students show what they know to progress to the next level. Flex academies (online learning with onsite support) are popping up everywhere. The learning value is increasing due to use of latest technology. The Learning value for various learning methods is indicated below:

Benefits of E-learning: The main benefits of the e-learning are:

- (a) Available anytime anywhere.
- (b) Lower costs to both students and the administration in the long run.
- (c) Reduced time from the job thereby increasing productivity.
- (d) Multiple delivery options by means of web, PC, CD-Rom, Internet, Intranet, etc.
- (e) Inbuilt student enrolment, management and monitoring facilities.
- (f) Students learn at their own pace and are not restricted by time or group concerns.
- (g) Encourages students to browse and acquire information from various hyperlinks on the



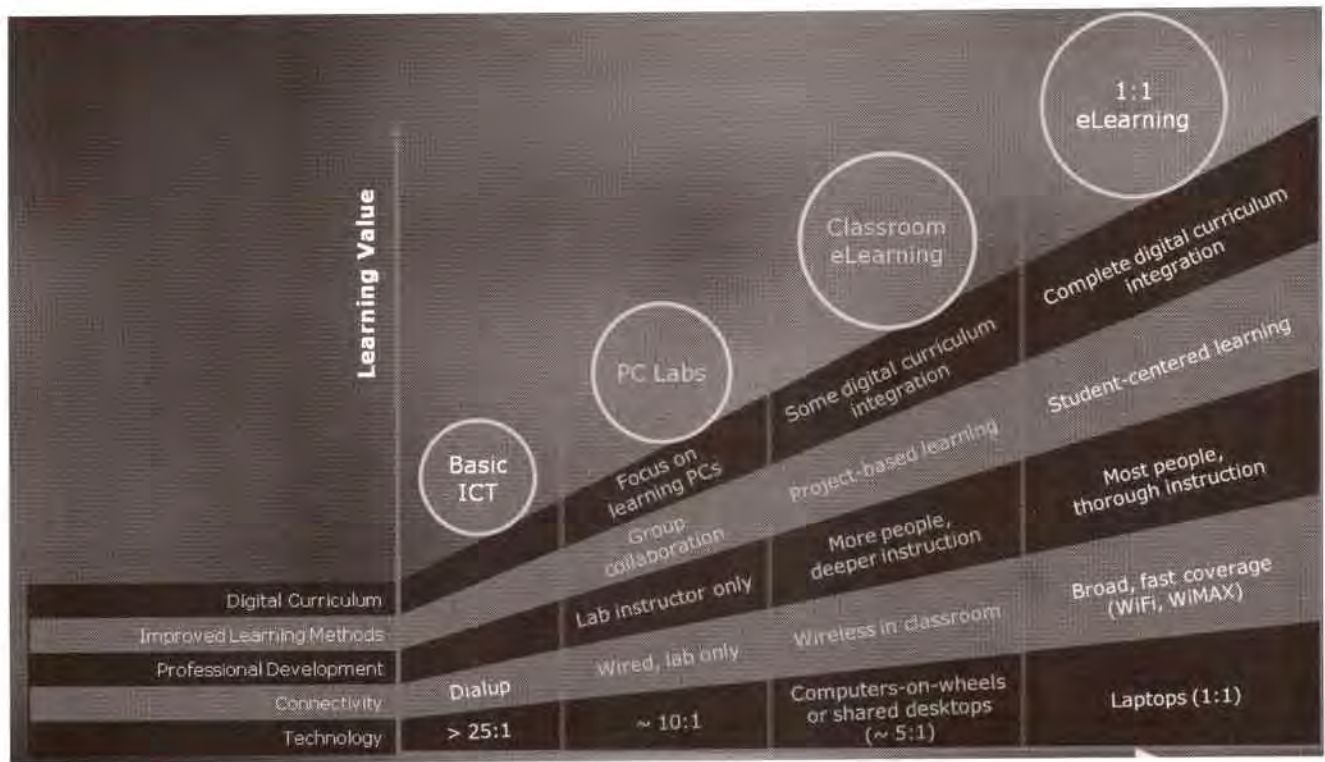


Fig. 3. Learning with Enabling Tools

worldwide web and obtain information suited to their personal situations.

- (h) Succeeds in building self confidence and self knowledge as the student himself takes responsibility of his learning.
- (j) Standardised training material available and delivered throughout the world no matter where the student enrolls for the course or what the module he chooses.

**Training with Focus on Cyber Security:** Information needs will grow exponentially. Without careful planning and information-handling skills, the decision-makers of the future will be susceptible to “analysis paralysis”. The system should be more adaptive, enabling it to respond to this ever-increasing and changing world of information technology. The cyber security training should enable every citizen to be able to understand dangers of cyber attacks and Information Warfare.

**Cloud Computing in Training:** Cloud Training is a relatively new concept in imparting education in the business world. The main advantage of cloud computing is the flexibility it offers to create, share, save and collaborate

from anywhere, at anytime and at any pace. Cloud computing is transforming education and the business world. Institutions are embracing the concept of cloud computing for creating flexible learning environments and online businesses to harness new global opportunities. Devices such as iPhones, iPads and tablets give access to these new environments on the go and at the touch of the screen. Now students can learn anything, anytime and anywhere provided they are connected to the Internet. Microsoft cloud computing in education gives good choice and flexibility. It’s a platform and applications can be on-premises, off-premises, or a combination of both, depending on the needs of the educational institution. The advantages of cloud computing in supporting the educational institutions are:

- (a) **Cost:** You choose a subscription or, in some cases, a pay-as-you-go plan—whichever works best with your organization’s business model.
- (b) **Flexibility:** Scale your infrastructure to maximize investments. Cloud computing allows you to dynamically scale as demands fluctuate.



- (c) Privacy: Help make data and services publicly available without jeopardizing sensitive information.

Augmented Reality (AR): According to Ronald Azuma, Research Leader at Nokia Research Centre, AR is an environment that includes both virtual reality and real-world elements. For instance, "An AR user might wear translucent goggles; through these, he could see the real world, as well as computer-generated images projected on top of that world." An augmented reality environment then, would include elements of the real world and the virtual world at the same time, and would be interactive in real time. The virtual objects could be either manipulated or stationary. The interaction between the virtual object and the real world brings to life abstract concepts and seeks to enhance understanding. Augmented reality can provide rich contextual learning for individuals learning a skill. Currently virtual reality and augmented reality applications are used for training in fields of business, military and medicine. In March 2010, the US Army put out a request for information on "Augmented Reality (AR) Systems Technology Roadmap Survey Dismounted Soldier Applications." Their objective is to explore, "methods of presenting 2D/3D virtual objects (representing various types of targets, fire and effects, friendly forces and opposition forces, civilians on the battlefield (COB), vehicles, etc.) to the dismounted soldier while operating both indoors and outdoors, on various types of live training environments. Additionally, the trainee would be capable of interacting with virtual targets, personnel, vehicles, etc. as though real. The objective is to create an interactive, multi-sensory, non-linear environment that provides the user with training that is unparalleled in flexibility and realism.

Focus on Priorities: Focus on priorities is important. Battle focus of soldiers during training will be the driving force in all futuristic training doctrines. Battle focus must remain throughout the entire training process and should be used by commanders to allocate resources for training based on wartime mission requirements. The technological revolution and continuous modernization of weapon system has added new

dimensions to the challenges for responsive training. Modern armies will be using high-tech equipment, hence it is prudent for the military planners to plan for manufacture of these equipment and logistics required to sustain these.

Feel the Change/Transition. While preparing for training in the future, one must acknowledge the changing characteristics of its trainees. We must capitalize on the skills of the students. Paradigm shifts will thus be required. We will have to rethink what roles the computer, telecommunications, and virtual reality will have in the new system, and what will be expected of the individual in the system. This will consequently require a new approach to education/training. The transition from present training methodology to 'Training in the future' encompasses the following:

- High compliance → High achievement
- Time driven → Result driven
- Labour intensive → Capital intensive
- Subject knowledge → Process knowledge
- Role learning/ memorising → Critical thinking
- Focus on weakness (academic) → Focus on strengths
- School time learning time → Learning any where and any time
- Teacher-centred → Student-centred
- One pace for all → Different rates and styles of learning
- Access at Training building → Learning at multiple access points
- Mass instruction → Personalised instruction
- Static learning → Mobile learning
- Hardware centric → Wi fi and Cloud computing

Change in Thinking: A well qualified man

thinks in higher horizons. His ideas are always better and productive. An organized futuristic training setup will compel a big change in the thinking. The new thought process will be wider and broader. They will be able to think at par with the best in world. Their thought process will become global rather than regional. This will ensure that the war fighter is able to overcome the challenges posed by the operating environment of the future. These challenges include the informational and technological explosions, smaller Armed forces, fiscal constraints, and the technological environment. It will provide the continuum of education necessary to inspire and develop junior leaders with the moral framework of integrity, service and excellence.

## CONCLUSION

The human resources are the nation's most important strategic resources. Only a force of dedicated, highly educated, and well-trained men capable of leveraging new ideas will succeed in the complex and fast-paced environment of future. Continuous improvements in the field of education should be there at all levels of education. There is, however, a definite need to introspect with respect to the training philosophy, content and methods of execution of training at all the training and educational institutions. We need to ensure that training conducted is entirely in keeping with the trainee requirements of each individual. Therefore, training has to meet the aspirations of individual students and simultaneously ensure achievement of desired terminal objectives. There is a requirement for a transformational shift in training that will significantly improve

training effectiveness while reducing its cost. This shift is driven by a combination of new technologies and emerging trends in learning, including the widespread use of social media, data analytics, robotics and simulation technologies. The present outdated training concept should be validated and we need to train for the future by making up the shortfalls on regular basis. The importance of training is aptly summarized by the statement "A training that brings about no change is as effective as a parachute that opens on the first bounce."

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# An Empirical study of Customer Experience and Its relationship with Customer satisfaction towards the services of banking sector

Meenakshi Sharma and D.S. Chaubey\*

## Abstract:

*The customer experience has emerged as the single most important aspect in achieving success for companies across all industries. Customer experience management (CEM or CXM) is a strategy that focuses the operations and processes of a business around the needs of the individual customer. Companies are focusing on the importance of the experience. In simple term Customer Experience Management represents the discipline, methodology and/or process used to comprehensively manage a customer's cross-channel exposure, interaction and transaction with a company, product, brand or service. This paper attempts to summarize the results of literature review on customer experience on towards the services of a bank from various perspective. Factor analysis, mean, ANOVA and structural equation modelling was carried out to assess the relationship. Study indicates the strong relationship between customer experience with the overall feeling, trust and their satisfaction and in turn it is helpful in delighting the customer. Some of the suggestions has to be drawn on the basis of the study.*

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**Keywords:** *Customer experience and satisfaction, customer feeling, customer delighting, customer complaints, etc.*

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## INTRODUCTION

In the present scenario, successful corporation gain competitive advantage through increased efficiency, high quality of service and improved customer relationship. Customers get information about the organization through customer advocacy. Creating and maintaining customer loyalty have become important in current service markets. In financial service industry, maintaining superior service quality is

considered critical in achieving customer satisfaction, value creation and growth. The ability to understand the needs of the consumer with respect to the product or service is vital for measuring the level of consumer satisfaction. Every business organization aims to satisfy its customers to a great extent, as the customer satisfaction lays foundation for the success of the business. The measurement of customer satisfaction has become mandatory in any organization.

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Customer experience (CX) is the sum of all experiences a customer has with a supplier of goods and/or services, over the duration of their relationship with that supplier. This can include awareness, discovery, attraction, interaction, purchase, use, cultivation and advocacy. It can also be used to mean an individual experience over one transaction; the distinction is usually clear in context.

Analysts and commentators who write about customer experience and customer relationship management have increasingly recognized the importance of managing the customer's experience.

A new mobile generation of consumers, the rise of direct pay and online financial services, and an increase in banking service fees all contribute to an on-going shift in how banking organizations service their customers. With an almost endless pool of financial institutions vying to provide a wide range of products to customers, banking organizations must strive to provide the most superior, consistent and effortless customer experience in order to acquire new customers, retain existing customers or win back lost customers. This requires a shift from a transactional mind set to one that is more focused on the relationship with the customer.

West Monroe Partners defines customer experience in the banking industry (commercial and individual consumers who own loans and deposits at an institution) as the sum of the customer's interactions with an institution across all touch-points, and the customer's resulting perceptions of the brand. A positive and effortless customer experience can result in increased customer satisfaction, loyalty, advocacy and greater customer lifetime value.

A company's ability to deliver an experience that sets it apart in the eyes of its customers serves to increase the amount of consumer spending with the company and, optimally, inspire loyalty to its brand. "Loyalty," says Jessica Sebor, "is now driven primarily by a company's interaction with its customers and how well it delivers on their wants and needs." (2008)

With products becoming commoditized, price differentiation no longer sustainable, and

customers demanding more companies—particularly communications service providers (landline, wireless, broadband, cable, satellite, etc.)—are focusing on delivering superior customer experiences. A study in the year of 2009 on 860 corporate executives revealed that companies that have increased their investment in customer experience management over the past three years report higher customer referral rates and customer satisfaction (Strativity Group, 2009).

The customer experience has emerged as the single most important aspect in achieving success for companies across all industries (Peppers and Rogers, 2005). For example, Starbucks spent less than \$10 million on advertising from 1987 to 1998 yet added over 2,000 new stores to accommodate growing sales. Starbucks' popularity is based on the experience that drove its customers to highly recommend their stores to friends and family.

Customer experience management (CEM or CXM) is a strategy that focuses the operations and processes of a business around the needs of the individual customer. Companies are focusing on the importance of the experience. Jeananne Rae says that companies are realizing that "building great consumer experiences is a complex enterprise, involving strategy, integration of technology, orchestrating business models, brand management and CEO commitment." (2006)

According to Bernd Schmitt, "The term 'Customer Experience Management' represents the discipline, methodology and/or process used to comprehensively manage a customer's cross-channel exposure, interaction and transaction with a company, product, brand or service."

According to James Allen of Harvard Business School, 80% of businesses state that they offer a great customer experience. This is in stark contrast to the 8% of customers who feel the same way. Allen exerts that businesses must be able to execute what he refers to as the 'Three D's'. The first D is about designing the correct incentive for the correctly identified consumer, offered in an enticing environment. The 2nd D is about a company's ability to focus



the entire team across various functions to deliver the proposed experience. The third D ultimately determines a company's success with an emphasis on developing consistency in execution (see Allen, James, R., Frederick F, H., & Barney, 2005). A company must constantly teach, train and develop in order to keep up with the constant demands of providing an exceptional customer experience.

According to Harvard Business Review blogger, Allen Richardson, a company must define and understand all dimensions of the customer experience in order to have long-term success. Some companies segment the customer experience into technical interactions with the customer such as use of the web, smartphone or tablet. Other companies define human interaction such as over the phone customer service or face-to-face retail service as the customer experience. In our ever-growing global economy, where technology and bricks-and-mortar business often interact or even compete for the customer base, it is important to recognize all these aspects as having an impact on the customer experience. Every business offers a customer experience. The more aware a business is of what type of experience they want to offer, the more likely they will create a positive experience.

However, despite the best-laid plans, there are certain aspects of the experience that cannot be fully controlled. Individual perceptions, emotions and behaviours can alter the customers' experience (Richardson, A. 2010). So, too, will bad experiences with a product. For example, a piece of equipment that consistently fails to function reliably, or that does not meet longevity expectations, will generate complaints that can propagate through word of mouth or online. For these reasons, customer-experience management is no substitute for good product design and proper product engineering. No amount of customer-experience management can compensate for an unreliable cellphone network, an airline that is unsafe to fly on, a computer that fails to meet expectations, a car that repeatedly fails to start or that needs innumerable repairs, clothing that cannot survive routine laundering, shoes that fall apart while being worn, a wobbly bookshelf that

collapses when loaded, a roof that leaks shortly after installation, a software that runs slowly and is crash-prone, or home appliances that generate safety hazards or break down too often. The increasingly online nature of the modern marketplace does not alter the fundamentals of sound business practice: in the long term, there is no substitute for providing good products and services at a reasonable price.

Perception is about how different people interpret the same environmental stimuli in different ways. One way a company can help improve customer perception is through utilizing diversity. Diversity in hiring will offer different insight or perspectives from different genders, ethnicities or cultural backgrounds. Diversity in staffing also helps to attract and retain a diverse customer base. Whether it is, age, race, gender or life experiences, customers are more likely to become a loyal customer if the company offers someone who can understand their journey and guide them through the customer experience. (Williams, C., 2009)

Today's banking services are being designed, built and deployed in a context dominated by elements other than the customer. This is particularly the case in the banking sector where the distinction between core bank processes and customer interactions is increasingly becoming blurred leading to a negative customer experience especially as customers are becoming more demanding. Our Customer Experience approach is designed to elevate the management of Customers' Experience to a strategic level, allowing the overall experience that's produced for customers to become a focal point for the organisation. We believe that building a brand reputation based on an excellent Customer Experience will drive sustainable competitive advantage in the future.

As competition strengthened with the advent of new private banks with technology advantage in the early 1990s the scenario started changing rapidly from the demand side and experience becoming key input. Technology enabled products, processes, channel, pricing, service and value propositions created a new situation. Banks in the public sector successfully upgraded their technology platforms to fight competition and keep the market share intact.



The private sector players were able to make a dent on the market share by focusing on customer experience in a holistic way but the penetration levels were always challenged by matching technology upgradation in different dimensions of public sector players. Thus products and services became almost bank neutral and customer experience becomes a differentiating factor.

In the view of the aforesaid, it is pertinent to study the customer experience (J. Sethuraman, 2012). It was found that customers of public sector banks were more satisfied with the service quality, than those of private sector banks (Pooja Mengi, 2009). There seems to be a great amount of variation with respect to the level of service quality offered by the different groups of banks. Identifies the factors that discriminate the three groups of banks. The customers in developing economies now give more importance to "technological factors" of services such as core service and they appreciate systematization of the service delivery as the yardstick in differentiating good and bad service. While the "human factors" seem to play a lesser role in discriminating the different groups of banks (G.S. Sureshchandar, 2003). Using the Customer Experience (CX) ecosystem our approach utilizes a combination of people, process, and systems to create a culture and philosophy that values customer centric thinking, speaking and action. Process efficiencies are driven through the lens of customer journeys, using technology first and foremost in a manner that makes organisations easy to do business with and reducing Customer Effort.

Tamas Jonas and Janos Kovesi (2010) stated that understanding the customers' voice is a key contributor to success of any organization that provides services. Customer sovereignty is a review of customer satisfaction towards service quality of banking sector the key concept in marketing and it is always assumed that the customer satisfaction is the crucial factor in determining the long run prosperity of the business.

K. Szabó says that by the 1990's the technological development started meeting the users' requirements again. For today it is

possible to create standardized (or completely integrated) systems, which are ready to ensure the data processing on a higher level. In the life of the banks it means the centralization of knowledge centers which register customer information.

A. Parasuraman suggests that the broadening the scope of marketing is to include the delivery of customer service as an integral component and demonstrates that a judicious blending of conventional marketing and superior customer service is the best recipe for sustained market success.

A.T. Allred, H.L. Addams have analyzed service quality from the view of access, courtesy, communication, credibility, security, empathy, tangibles, basic service, fairness, fixing mistakes and guarantees and have concluded that majority of the respondents have stopped using a financial service provider because of poor service performance.

V.A. Zeithaml, A. Parasuraman and A. Malhotra, stated that to deliver superior service quality, managers of the companies with Web presence must first understand how customers perceive and evaluate online customer service. A.P. Gaudet suggested that technology satisfaction does drive overall customer satisfaction and that, in turn, overall customer satisfaction does drive loyalty

T. Rungting, says that expectations and perceived service quality strongly influence customers' emotions; emotions have a strong impact on the perception of service experience and customer satisfaction; and service experience mediates the effects of expectations, service quality, and emotions on customer satisfaction.

Bargal and Sharma analysed the role of service marketing in banking sector. The identified important service factors in the banking sector are diversified services, flexible business transaction hours, accessibility of bank location, installation of web system, professional training to the employees, customers' complaint system and performance based appraisal system to enrich their services to their customers. S.D. Young aimed at the establishment of a quantifiable connection linking customer loyalty



to financial performance. The loyalty index used is a composite of four factors (use again, recommend to others, exceeding expectations, and satisfaction).

With the increased competition, global market, growing product portfolio and diminishing margins, banking customers have also changed in recent years. Modern customers require flexibility in hours of operation, greater convenience, customization, transparency, accessibility and control. Competition and cost to attract the new customers and the expenses spent for it are heavy. Customer defection rates are higher than ever because of increased market competition. With so many different financial institutions to choose from consumers can now demand better quality services and more customized products from their banks. Thus, the study of customer satisfaction towards the quality of service of banking sector is the need of the hour. This paper attempts to summarize the results of literature review on customer satisfaction towards the services of a bank from five different perspectives, namely, service encounters, waiting time of the customer to get the service, role of intermediaries, quality of service provided by the bank and customer complaints towards the bank.

### Objectives and Research Methodology

In the present day of competitive environment, the banks are challenged by globalization, deregulation, industry consolidation, increasing regulatory requirements, decreasing margins, and heightened customer expectations. Every bank whether private and public are focusing on attracting and retaining customers, increasing sales, and differentiating their organization from competitors while improving the efficiency of their business operations and lowering their overall costs. Customers today can contact and do business with their bank through many different channels—from the traditional bank branch and call center to ATMs, online banking, and mobile financial services. With customers using any combination of the channels available to them, it is essential that banks form a coherent multi-channel strategy. Offering a variety of channels may appear in itself to be good customer service. But

if those channels remain isolated and disconnected in separate silos, and are not fully integrated, they can actually undermine the customer experience. The present research work has been taken up with the following objective:

- To analyze the customer experience with the banking services offered through different channel.
- To compare the customer experience toward staff and their services of public and private sector banks in Dehradun area;
- To draw conclusions and give suggestion on the basis of study.

Customers' Experience survey of 255 customers have been carried out in order to assess and compare the experiences of customer from the performance of public and private sector banks in terms of various marketing related aspects. It has been conducted in some selected city of Uttarakhand like, Dehradun, Rishikesh, Haridwar and Haldwani. Well-structured questionnaire has been used to collect primary data from customers about service personnel, service offering, facilitating services, accessibility, image and overall customer satisfaction of public and private sector banks. Customers have been asked to respond for their primary banks which they use the most. Customers have been randomly selected at the selected branches of public and private sector banks for their responses. Chronback alpha Test of reliability, One way Analysis of Variance—F test have been carried out to compare the performance of public and private sector banks for all the aspects. Table 1 present the demographic characteristics of the respondents.

As seen in Table 1 out of the total respondents 60% were males and 40% females which implies that males were more than the females in the gender category of the respondents.

As per the table among the total respondents 62% were married and 38% were unmarried which reveals that majority of respondents were married. It can also be seen that out of the total respondents 5.1% are less than 20 years of age, 36.5 % are in the age group of 21-35, 36.9% are in the age group of 36-50,

**Table 1.** Demographic profile of the customers

Demographics	Frequency	%
Gender (M/F)		
Male	153	60
Female	102	40
Marital Status		
Married	158	62
Unmarried	97	38
Age		
Less than 20	13	5.1
21-35	93	36.5
36-50	94	36.9
51-65	47	18.4
Above 65	8	3.1
Qualification		
Bachelor Degree	9	3.5
Master Degree	139	54.5
Professional and any other Degree	107	42
Monthly Income		
10,001-30,000	197	77.3
30,001-50,000	49	19.2
50,001 & above	9	3.5
Total	255	100

18.4 % are of the age group of 51-65 and 3.1% of the respondents are above 65 years of age, which implies that majority of the respondents are of age 21-35 years and 36-50 years while least no. of respondents are above 65 years of age which implies that max candidates who use banking services fall under the age group of 21-50 years of age.

Furthermore, out of the total respondents only 3.5 % are graduates and max that is 54.5% out of total respondents are post graduates while 42% possess a professional degree which implies that there is high literacy level among the respondents.

With regard to employment status majority that is 77.3% have income between 10,001-30,000, 19.2% earn monthly between 30,000-50,000, 3.5% of them have income above 50,000 which implies that majority of respondents are employed lying in the income group of 10,001-30,000.

As seen in Table 2 out of the total 255 respondents 54.1% customers take services from

Public sector banks where as 45.9 % respondents are customers of Private sector banks which

**Table 2.** Nature of Bank

	Nature of Bank		
	Frequency	%	Cumulative %
Public Sector Banks	138	54.1	54.1
Private sector banks	117	45.9	100
Total	255	100	

**Table 3.** Nature of Services Availed

Services	Responses		
	Frequency	%	% of Cases
Branch Banking	255	40.8	100.0
Internet Banking	147	23.5	57.6
Mobile Banking	103	16.5	40.4
ATM	120	19.2	47.1
Total	625	100.0	245.1

reveals that customers rely on both private and public sector banks as the various retail bank services are concerned.

As per the above table out of 255 respondents all that is 100% avail the branch banking services, around 57.6% customers use internet banking as well, 40.40% use mobile banking and 47.10% are availing ATM services, which infers that a good ratio of customers are using technological facilities provided by banks Hence the banks have a good scope in technological support services.

From the above table the loading of the factors can be observed. The loading on factors can be positive or negative. The higher the loading the more important is the factor. According to the suggestions of statistician, anything above 0.44 could be considered salient; the increased loading becomes more vital in determining factor. All the higher loadings in the table are positive. The exploratory factor analysis



**Table 4.** Results of Factor Analysis

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.508	31.842	31.842	10.508	31.842	31.842	6.430	19.484	19.484
2	5.707	17.295	49.137	5.707	17.295	49.137	5.568	16.873	36.357
3	3.249	9.845	58.982	3.249	9.845	58.982	4.348	13.174	49.531
4	2.855	8.651	67.633	2.855	8.651	67.633	3.634	11.012	60.543
5	1.695	5.136	72.769	1.695	5.136	72.769	3.171	9.608	70.151
6	1.517	4.597	77.366	1.517	4.597	77.366	2.024	6.134	76.285
7	1.087	3.294	80.660	1.087	3.294	80.660	1.444	4.375	80.660
8	.942	2.856	83.516						
9	.746	2.261	85.777						
10	.706	2.139	87.916						
11	.550	1.667	89.583						
12	.521	1.578	91.161						
13	.470	1.423	92.584						
14	.401	1.214	93.798						
15	.347	1.052	94.850						
16	.296	.897	95.747						
17	.252	.763	96.509						
18	.199	.603	97.112						
19	.190	.576	97.688						
20	.155	.470	98.158						
21	.121	.365	98.523						
22	.093	.283	98.806						
23	.083	.252	99.058						
24	.069	.210	99.269						
25	.060	.182	99.450						
26	.051	.155	99.605						
27	.044	.135	99.740						
28	.039	.119	99.858						
29	.021	.063	99.922						
30	.013	.040	99.962						
31	.008	.024	99.985						
32	.004	.012	99.997						
33	.001	.003	100.000						

Extraction Method: Principal Component Analysis

extracted 7 factors with eigen values greater than 1, which accounted for 80.66% of variance in the data. The results are presented in table. Most of the factor loadings were greater than 0.60, implying a reasonably high correlation between extracted factors and their individual items. The factors derived represent the different elements

of customer experiences, which form the underlying factors from the original 33 scale response items given. Referring to the table, Factor 1 having variance 31.842% represents the elements of the positive outlook of the customers towards the bank and is, therefore, labelled as 'POSITIVE OUTLOOK'. These elements are the

**Table 5.** Rotated Component Matrix<sup>a</sup>

	Component						
	Posi- tive Out- look	Con- veni- ence	Res- pon- sive- ness	Techno- logical support	Amb- iance	Marketing support services	Prof- essio- nalism
I will not switch to any other bank.	.914						
I say positive things about the bank to other people.	.877						
Overall the bank is trustworthy.	.867						
I will encourage friends and relatives to use the service offered by the bank.	.855						
Overall, I am satisfied with the bank services.	.818						
I intend to continue being a customer of the bank for a long time to come.	.753						
You feel safe in your transactions with the bank.	.561						
Bank is located at convenient place.		.894					
The employees of the bank under- stand your specific needs.		.759					
The bank has mutiple branches.		.738					
The bank gives you individual attention.		.704					
The bank has employees who give you personal attention.		.686					
Employees in the bank are always willing to help you.		.670					
The behaviour of employees in the bank instills confidence in you.		.586					
Employees in the bank tell you exactly when the services will be performed.		.581					
Employees in the bank are consistently courteous with you		.565					
The bank has your best interests at heart.		.450					
When you have a problem, the bank shows a sincere interest in solving it.			.873				
The bank provides its service at the time it promises to do so.			.862				
When the bank promises to do some- thing by a certain time, it does so.			.795				
The bank performs the service right the first time.			.741				
The bank provides phone account service facilities.				.789			
The bank provides Internet bank facilities.				.747			
Employees in the bank are never too busy to respond to your request.				.675			
The banks image and reputation is good.				.648			



**Table 5.** Rotated Component Matrix<sup>a</sup> (contd.)

	Component						
	Posi- tive Out- look	Con- veni- ence	Res- pon- sive- ness	Techno- logical support	Amb- iance	Marketing support services	Prof- essio- nalism
The bank has operating hours convenient to all its customers.				.628			
Employees in the bank give you prompt service.				.539			
Bank infrastructure is visually appealing.					.762		
The bank insists on error free records.					.731		
The environment is neat and tidy.					.720		
There are sufficient ATMs located in the city.					.714		
Materials associated with the service (such as pamphlets) are visually appealing.						.747	
Employees in the bank have the knowledge to answer your questions.							.782

Extraction Method: Principal Component Analysis      Rotation Method: Varimax with Kaiser Normalization      <sup>a</sup> Rotation converged in 13 iterations

Trust in the bank, Positive perception, loyalty towards the bank, positive word of mouth, customers willingness towards long term relationship towards the bank. Factor 2 with a variance of 17.295% has all the statements related to the convenient and location and convenient services provided by the employees working in the bank and therefore has been termed as 'CONVENIENCE'. The elements were the convenient location, multiple branches, individual attention paid by bank as well as its employees, willingness of employees to help the customers, courteous and empathic behaviour of employees and the promptness in making the promises, its clear cut objective is to attract its customers and build a brand (image) of the bank. The statements that load into factor 3, having variance 9.845% all were concerned with the responsible attitude of bank towards the customers in providing timely services and thus was abbreviated as 'RESPONSIVENESS'. The elements were sincere interest shown by bank in solving the problems, providing timely services, making up the promises made by the bank. Factor 4 having variance 8.651% consisted of the Technological functions provided by banks and

has been named as 'TECHNOLOGICAL SUPPORT'. The elements factored were, the phone account facilities, internet facilities, speed, good reputation and convenient operating hours. Factor 5 having variance equal to 5.136% was a summation of the elements that are related to the appealing infrastructure and physical environment and hence was termed 'AMBIENCE'. The elements were appealing infrastructure, neat and clean environment, sufficient ATMs in the town. Factor 6 with a variance of 4.597% consisted marketing initiative taken by banks and was termed as 'MARKETING SUPPORT SERVICES' comprising the appealing marketing materials used by the bank. Factor 7 having variance 3.294% was related to the knowledge of bank employees so that they can guide customers correctly hence abbreviated as 'PROFESSIONALISM'.

An attempt was made to know how far advertising of the product influence customers in paying extra premium for the product. The study reveals that 15.8% respondents are of the opinion that it influences to a great extent for paying extra premium. 25.5% respondent are of

the opinion that it influences to some extent. 35.7% indicated that it influences to a considerable extent in paying extra premium for the product. Remaining 23% indicated to a little extent in paying extra premium for the sake of advertising. However, it is significant to not that all the respondents feel that advertising influence the customers in paying extra premium for the product but with varying extent.

As is evident from the mean ratings of

various elements of customer experience promoting customer satisfaction indicates that marketing support services provided by banking organization scored highest mean among all income group of respondents. However, technological support was rated highest as compared to all elements in the higher income group respondents.

One way ANOVA was carried out to test the hypothesis that, the mean of different

**Table 6.** Mean of Different Elements of Customer Experience Promoting Customer Satisfaction

Income Level (per month in ₹)	Positive outlook	Convenience	Responsiveness	Technological support	Ambience	Marketing support services	Professionalism
10001-300000	3.6976	3.7086	3.6619	3.6946	3.6992	3.6904	3.5787
30000-50000	2.2741	2.6000	3.4571	3.8129	3.2959	4.4694	3.4490
50001 and above	3.7143	3.9111	3.8222	4.1852	3.7500	3.8889	3.3333
Total	3.4246	3.5027	3.6282	3.7346	3.6235	3.8471	3.5451

**Table 7.** One Way ANOVA With Income Categories respondents

		Sum of Squares	df	Mean Square	F	Sig.
Positive outlook	Between Groups	80.302	2	40.151	71.916	.000
	Within Groups	140.694	252	.558		
	Total	220.996	254			
Convenience	Between Groups	49.784	2	24.892	65.461	.000
	Within Groups	95.824	252	.380		
	Total	145.608	254			
Responsiveness	Between Groups	1.997	2	.998	1.981	.140
	Within Groups	127.000	252	.504		
	Total	128.997	254			
Technological Support	Between Groups	2.443	2	1.222	2.291	.103
	Within Groups	134.379	252	.533		
	Total	136.822	254			
Ambience	Between Groups	6.532	2	3.266	7.121	.001
	Within Groups	115.577	252	.459		
	Total	122.109	254			
Marketing Support Services	Between Groups	23.831	2	11.915	14.491	.000
	Within Groups	207.205	252	.822		
	Total	231.035	254			
Professionalism	Between Groups	1.078	2	.539	.077	.926
	Within Groups	1756.153	252	6.969		
	Total	1757.231	254			



elements of customers experience promoting customer satisfaction does not differ significantly across the different income categories of respondents; the table showing calculated value of F is lesser than the tabulated value of F (3.0) at ( $p < 0.05$ ) level of significance in the case elements like Responsiveness, Technological Support and Professionalism thus null hypothesis is accepted indicating that the mean of different elements of customers experience promoting customer satisfaction does not differ significantly across the different income categories of respondents. However, null hypothesis is rejected in case of elements like Positive outlook, Convenience, Ambience and Marketing Support Services and it is inferred that there is significant difference in the opinion of the respondents related to these elements.

### Segmentation of customers using Cluster Analysis

Cluster analysis is a major technique for classifying a 'mountain' of information into manageable meaningful piles. It is a data

**Table 8.** Number of Cases in each Cluster

Cluster	1	44.000
	2	40.000
	3	29.000
	4	24.000
	5	60.000
	6	57.000
	7	1.000
Valid		255.000
Missing		.000

reduction tool that creates subgroups that are more manageable than individual datum. Like factor analysis, it examines the full complement of inter-relationships between variables. Using cluster analysis, a customer 'type' can represent a homogeneous segment. Identifying their particular needs allows organization to adapt specific strategies with greater precision and direct appeal within the segment. Targeting specific segments is cheaper and more accurate than broad-scale marketing. Customers respond better to segment marketing which addresses their specific needs, leading to increased market share and customer satisfaction

A cluster analysis was run on seven elements of customer experience shorted out of 33 variable each responding to different customer experience. A K mean cluster analysis method produced seven clusters, between which the variables were significantly different in the main. From the table it could be seen that cluster 1 has 44 respondents. For them marketing support services (4.02) is the prime factor followed by ambience (3.98) and Positive outlook(3.36). in the cluster 2 their 40 respondents, for them the convenience (3.99) is the main followed by technological support. In the cluster 3 there are 29 respondents who indicated marketing support services (4.90) satisfy them most followed by technological support and responsiveness. In the cluster 4 there are 24 respondents whose first choice is marketing support system and followed by professionalism. Fifth cluster is of 60 respondents whose first choice is technological support followed by responsiveness. Sixth cluster is of 57 respondents where customer has got equal satisfaction with positive outlook and

**Table 9.** Final Cluster Centers

	Cluster						
	1	2	3	4	5	6	7
Positive outlook	3.36	3.04	1.70	3.30	3.61	4.46	4.43
Convenience	3.31	3.99	2.06	3.81	3.21	4.22	3.40
Responsiveness	2.98	3.32	3.24	4.36	3.80	4.07	3.00
Technological support	2.67	3.75	3.98	3.53	3.80	4.46	2.83
Ambience	3.98	2.49	3.10	3.90	3.65	4.27	3.25
Marketing support services	4.02	3.63	4.90	5.00	2.50	4.28	3.00
Professionalism	1.95	4.00	2.00	4.75	3.60	4.00	4.20

technological support with mean of 4.46. Seventh cluster is of 1 respondents whose first choice is positive outlook and is followed by professionalism.

## CONCLUSION

In the present consumer economy, attracting and crucially keeping customers for long-term is a key challenge for any organization. The customer is at the center of all business activities and particularly, the banks have organized by positioning the staff to meet the needs of the customers in a highly customized and responsive manner. The ultimate, in customer satisfaction, is giving customers exactly what they want. The customers are the most valuable asset of any organization. To gain greater customer experience and satisfaction, right person should be identified, properly trained, supervised, motivated and providing conducive work environment with clear understanding of the rules of the organization. The high levels of internal service quality like positive outlook, convenience, responsiveness, technological support, ambiance, marketing support services, professionalism, lead to higher levels of employee satisfaction. The happier employees are, the more likely they are to stay and the better their productivity and five more satisfaction to the customers.

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# Supervisor Support as Mediator of Association between Role Clarity and Organisational Citizenship Behaviour (OCB)

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## Abstract

*The paper deals with investigation of effect of Role Clarity and Supervisor Support on Organisational Citizenship Behaviour (OCB) among Indian business executives. Additionally, paper attempts to examine mediation effect of Supervisor Support on Role Clarity and Organisational Citizenship Behaviour Relationship. The sample for the study consisted of 198 business executives from various sectors in India. Data was collected exclusively through personal visit and face-to-face interaction. To test the hypothesis in research, Correlation and Regression Analysis were used. Further, to test the mediation level, Baron and Kenny's method was deployed. All variables in the study were found to be significantly related to each other. Supervisor Support was found to partially mediate the relationship between Role Clarity-Organisational Citizenship Behaviour. Amusingly, both Supervisor Support and Role Clarity affected Organisational Citizenship Behaviour directly as well as indirectly through other variables. With investigation of relationship between Role Clarity, Supervisor Support and Organisational Citizenship Behaviour (OCB), the study made an attempt to fill the gap in present literature between all the three existing variables and the implications they will have on Indian executives.*

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**Keywords:** Role Clarity, Supervisor Support, Organisational Citizenship Behaviour, Altruism, India

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## INTRODUCTION

Many modern management theories and practices are based on Motivation theories like reinforcement theory (Skinner, 1953), expectancy theory (Vroom, 1964), and equity theory (Adams, 1963). They are basically based on reward-motivation relationship. Almost all the HR policies in

modern organisations are based on this relationship. Then when does concept of Voluntarism stands in these organisations? One of the contemporary topics of Organisational Behaviour i.e. Organisational Citizenship Behaviour (OCB) has become centre of attraction to academicians. OCB deals with voluntary behaviour for benefiting the organisation, without boundaries of formal

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reward system. Actually, it cannot even be rewarded truly because most of the OCB of employees go unnoticed and unwatched. Organ and later Podsakoff did extensive studies on the topic, to overcome the dilemma of considering OCB as in-role or extra-role. In reaching so, OCB was linked to various other variables like Role Clarity, Satisfaction and even Influence of Supervisor. The work was extended by various authors.

Our study also is based on these concepts. In an attempt to find out OCB as outcome, we tried to relate it to Role Clarity and Supervisor Support. Our study aims to understand the mediating effect of Supervisor Support on relationship of Role Clarity and OCB in Indian context.

### **Organisational Citizenship Behaviour (OCB)**

Organisational Citizenship Behaviour (OCB) has been stated as those behaviours shown by employees that are voluntary in nature and promotes effectiveness in the organisation but are not done for reward (Organ, 1988). This category consists of those behaviours which an employee engages in at his/her discretion and that smoothes the progress of organisational effectiveness and also promotes interests of organisation (Brief & Motowidlo, 1986). While discussing the OCB variable more deeply it becomes important to also consider the factors that influence the consideration of what is OCB and practiced by whom? This is of great importance because their exist variation on how individuals define and measure OCB. For e.g. some behaviours will be specified as in-role while same behaviour will be considered as extra-role by other individual (Vandenberg, Lance & Taylor, 2005; Morrison, 1994). One of the possible contributors to this difference may be culture and other related variables to culture. Like, social culture usually gives shape to expectations, perceptions, norms, etc. This social culture is learnt in early socialization. They can be resistant to change and do impact perception and evaluation of social exchanges (Triandis, 1994).

### **SCOPE OF OCB**

Even in the absence of consensus on scope of OCB, five projected dimensions of OCB by Organ (1988) are used worldwide. The dimensions are:

*Altruism* refers to helping behaviour aimed towards a specific person and that will eventually do provide profit to organisation. For e.g., sharing a co-worker's workload.

*Courtesy* can be defined as avoiding job related interpersonal Difficulties or Problems from taking place. For e.g., notifying other colleagues about being absent in advance.

*Conscientiousness* is stated as undertaking actions that are advantageous to the organisation, and it occupies performing one's job and role or duties even without surveillance. For e.g., coming to office on time when nobody is even watching.

*Sportsmanship* is the behaviour of tolerating some unusual situations without complaints. For e.g., tolerating fluctuations in office temperatures.

*Civic Virtue* means being concerned about the well functioning of the company. Be alarmed about something going wrong in organisation. For e.g., attending meetings and keeping update information about in organisation.

With indication to the five dimensions of OCB by Organ (1988), altruism and courtesy are further individual oriented (OCBI), and conscientiousness, sportsmanship, and civic virtue are greatly more oriented towards the organisation (OCBO) Even though Organ's five-dimension structure has been extensively used in prior research (LePine *et al.*, 2002; Podsakoff *et al.*, 2000) recent researches have not reached an agreement in regards to which particular dimensions should be included when examining OCB. To address this issue, LePine *et al.* (2002) carried out a meta-analysis to scrutinize the relationship among these dimensions. The results hence produced signified that these dimensions were highly correlated with the exception of sportsmanship, and the dimensions did not differentially relate to the several predictors of OCB including satisfaction, commitment, fairness, leader support, and conscientiousness.



### Role Clarity and Organisational Citizenship Behaviour (OCB)

Shoemaker (1999) defined Role Clarity as the degree to which a person is convinced concerning how he/she is expected to do a job. Level of clarity has also been associated to performance whereby an individual who is clear about his/her role will be more pertinent in fulfilling that particular function (Braxton, 2008). According to Mukherjee & Malhotra (2006) Role Clarity can also be defined as the point to which an employee attains information about the anticipated outcomes of the duties to be done by him/her in specific terms. It enhances the insight of being proficient in individuals because they realize what they must know, what they are competent of and how will they do it (Wynne & Stringer, 1997; Baron & Armstrong, 1998). If job roles are not properly/ clearly defined, there is constantly likelihood for individuals will take up duties that are not in fact theirs while disregarding what they are expected to do. This disproportion between what one is expected to do and what he/she performs creates role ambiguity and role conflict among employees (Fields, 2002).

Organ (1997) while cleaning the construct of OCB, focused on discretionary actions of the employee which is not enforceable or required by the Job Description or the Role. He also focused on the concept of "role" and "job". While differentiating the two, job was considered as the description of Duties given by employer at the time of employment, which is generally tightly stated and defined while Role comes with vast discretionary power with it. Fortune magazine's cover story titled "The end of the Job" stressed that job no longer is the best way of doing work amidst changing environment, downsizing, team based organisation. Smith *et al.*, (1983) stated that OCB are things that your supervisor would like you to do, though he can't make you do it and also cannot guarantee any reward. So, by this even those behaviour comes under clarity regarding superior and hence a part of role clarity. In a study conducted by Morrison (1994), 18 out of 20 items were identified by most of the respondents as "in-role". He also added that OCB varies from one employee to

next one and also between supervisor and employee.

Role Clarity's negative dimensions i.e., Role Conflict and Role Ambiguity were found significantly negatively related to OCB by a later study done by (Podsakoff *et. al.*, 2000). Kwon (2002) also found similar results with Role Ambiguity and Altruism.

From the above evidence it can be concluded that a High level of understanding and Clarity regarding what an employee does is really necessary in the organisation. And with the growing clarity of what are the expectations of people around, the employee becomes more confident and exhibits a higher OCB. Therefore, previous Literature leads us to following Hypothesis.

**H1.** Role Clarity will relate positively with Organisational Citizenship Behaviour (OCB).

### Supervisor support and Organisational Citizenship Behaviour (OCB)

Generally, managers at middle levels are at central positions in organisations. They are answerable for effective accomplishment of goals of organisation by managing strategies, change, working environment through well functioning teams and motivated subordinates (Huy, 2002; Floyd & Wooldridge, 1997; Stewart *et al.*, 1994). To a great level, firm's survival depends on intelligence, creativity and innovation of managers (Dutton *et al.*, 1997). Supervisory support and organisational trust creates forums of exchanges at multiple levels (Randall *et al.*, 1999; Shore & Coyle-Shapiro, 2003). In fact, "prior studies have successfully established that employees are involved in at least two social relationships at work: one with his or her immediate supervisor, and one with his or her organisation" (Masterson *et al.*, 2000). At workplace, immediate supervisors are the once who have direct and frequent contact with their subordinates. Behaviours and actions of supervisor, which are essential determinants of subordinate's attitude, proves as the foundation of trust in organisation (Whitener *et al.*, 1998).

Support from supervisor acts as a predictor

of the healthy relationship between supervisors and subordinates (Stinglhamber & Vandenberghe, 2003). Concerned attitude of supervisors for well being of employees, extended help in career advancement and their safety signals subordinates that supervisors are interested in close social exchange relationship. To create balance in exchange, employees will be obliged to return the gestures. By performing their duties and roles effectively, they portray their credibility and hence steady growth of mutual trust and services (Blau, 1964). This reciprocity stabilizes the relation between both the parties (Blau, 1964). Also this trusting relationship further empowers people to make more investments emotionally (Lewis & Weigert, 1985).

Past studies have demonstrated that generally high supervisory support can foster display of OCB by employees (Podsakoff *et al.*, 2000), which can be stated as beneficial behaviour by employees which is crucial to uphold social system in organisation (Organ, 1997). Also some past studies have established that employees who get higher support from managers/supervisors are likely to display more OCB but with some conditions (Podsakoff *et al.*, 1996b). Having said that, it is to be noted, that results from two meta-analysis (i.e., Podsakoff *et al.*, 1996a; LePine *et al.*, 2002) established a humble positive correlation between OCB and Supervisor support showing that supervisor support is normally supportive in fostering employees' OCB behaviour. Although these past researches confirmed possible positive relationship between supervisor support and employees' OCB, we still don't know the workings entrenched within the system. Moreover, we are yet to accurately form the process in which supervisory support leads to employees' OCB. Research by various authors smoothened the way to achieve this. For e.g., in a study on bank employees and their supervisors, Smith *et al.*, (1983) discovered that supervisory support would develop job satisfaction, which in turn would improve helping attitude of employees. Also, a study on real-estate sales people done by Netemeyer *et al.*, (1997) specified that employees with high level of supervisory support were more likely to have high Person-Organisation fit.

- H2. Supervisor Support will relate positively to Organisational Citizenship Behaviour (OCB)
- H3. Role Clarity will relate positively to Supervisor Support
- H4. Supervisor Support will mediate the relationship between Role Clarity and Organisational Citizenship Behaviour (OCB).

## METHODOLOGY

### Respondents

About 198 executives from Private as well as Public sector, manufacturing and services Industry took part in the study. 144 (72.08%) were male and 54 (27.92%) were female. About 9 (45.6%) participants were between age of 21-25, 31 (15.7%) between age of 26-30, 47 (23.04%) between age of 31-35, 25 (12.7%) between age of 36-40, 9 (4.6%) between 41-45 and 46 (39.08%) were above 46. Based upon the organisational structure, 58 (29.29%) respondents were from Junior Level, 111 (56.06%) from Middle level and 29 (14.64%) from Senior Level. Education Level wise classifications says that 16 (8.08%) respondents were having Diploma, 95 (47.97%) with Graduate degree, 80 (40.4%) were having a Post Graduate degree and 7 (3.53%) had above than Post Graduate degree as Highest Qualification with them. In front of Total Experience, 35 (17.67%) were between 0-5 years, 49 (24.74%) between 5-10 years, 28 (14.14%) between 10-15 years, 17 (8.58%) between 15-20 years and there were 69 (34.84%) with more than 20 years of Work Experience. The Respondents were from both Private and Public sector, in total 69 (34.84%) were from Private Companies and 129 (65.16%) from Public Enterprises. The Questionnaires were distributed to respondents taking into consideration their willingness and interest to give responses. The data was collected through face to face Interactions.

### Measures

Role Ambiguity: Role Clarity Questionnaire by Udai Pareek (2002) was used to assess Level of Role Clarity among the employees in organisations in the study. The Role Clarity



Questionnaire comprises of 15 items and is a 5-point Likert scale. The Cronbach's alpha value for the 15 item Role Ambiguity: Role Clarity Questionnaire was found to be 0.936. Some sample items of the questionnaire are 'What your senior officers expect from you?', 'What are the rules, regulations and procedures relevant for your role?', 'Is there an appraisal system to assess how well you perform in your role?'

Scale for Supervisor support was taken from QWL Scale developed by McDonald (2001) with proven reliability and validity. Reliability Coefficients of Supervisor support was 0.89. It was measured with 10 items and was a five-point Likert-scale that varies from 1 for 'strongly agree' to 5 for 'strongly disagree'. In addition, there is one option of 'not applicable' which is indicated by number 6. Some sample items are 'The feedback I receive on my work from my manager/supervisor is constructive', 'My manager/supervisor has adequate knowledge to guide and advise me' and 'When I am under pressure, this is usually recognized and dealt with by my manager/supervisor'.

OCB was measured on five-point Likert-scale adopted from Podsakoff *et.al.*, (1990), Scale consisted of 24 items representing 5 types citizenship behaviour i.e., Altruism, Courtesy, Conscientiousness, Sportsmanship and Civic virtue. The Reliability Coefficients of the scale was 0.80. Some sample items of the questionnaire are 'I help others who have heavy workloads.', 'I know how to report complaints and suggestions peacefully.' and 'I willingly help others who have work related problems.'

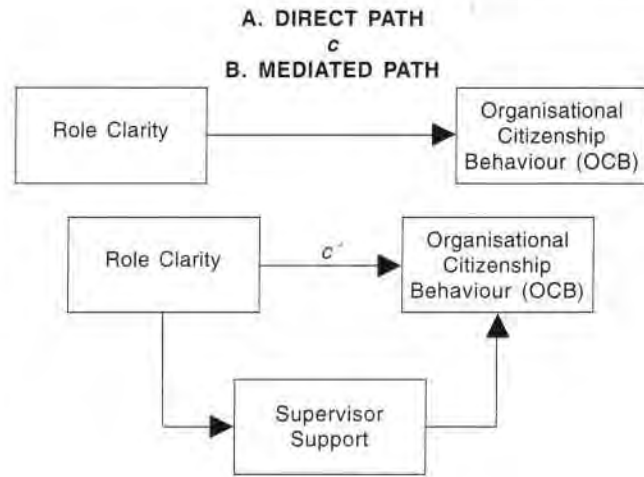


Fig. 1. (A) Illustration of direct effect of Role Clarity on OCB and (B) Illustration of simple mediation effect of Supervisor support on Role Clarity-OCB Relationship

**Data Analysis**

To test the hypothesis of the study, correlation and regression were deployed with the help of SPSS 20.0. To test the mediation effect of Supervisor support on Role Clarity on Organisational Citizenship Behaviour (OCB) Baron and Kenny's (1986) technique was used. For further analysis, Sobel z-test (Sobel, 1982) was also conducted as a way of examining further the mediation effect above and beyond what was already covered by recommendations of Kenny and Baron.

**Results**

Mean, S.D. and correlation coefficients of the variables are showcased in Table 1. As can be

**Table 1.** Mean, S.D., inter-correlation among variable under study

Variables	Mean	S.D.	1	2	3	4	5	6	7	8
Conscientiousness(1)	3.86	0.61	1							
Sportsmanship (2)	3.28	0.68	0.017	1						
Civic Virtue(3)	3.63	0.56	0.696*	0.403*	1					
Court (4)	3.74	0.51	0.740*	0.607*	0.725*	1				
Altruism (5)	3.70	0.45	0.697*	0.718*	0.665*	0.746*	1			
OCB (6)	3.64	0.52	0.856*	0.601*	0.788*	0.867*	0.795*	1		
Role Clarity (7)	3.89	0.50	0.543*	0.509*	0.510*	0.523*	0.476*	0.551*	1	
Supervisor support(8)	3.33	0.52	0.505*	0.560*	0.537*	0.509*	0.549*	0.649*	0.610*	1

Notes: \*Correlation is significant at 0.01 level (two-tailed).

noticed, both Role Clarity and Supervisor Support significantly and positively correlated with all five dimensions of Organisational Citizenship Behaviour (OCB) as well as with overall OCB. Although Role Clarity correlates most strongly with Conscientiousness, Supervisor Support correlates most strongly with Altruism dimension of OCB. The results of the study also portrayed positive bivariate correlation between other two variables i.e. Role Clarity and Supervisor Support. Therefore, all the variables in the study are significantly related with each other, thus, giving support to H1, H2 and H3.

### Supervisor Support as Mediator

To find out the validity of projected mediation of Supervisor support on Role Clarity on OCB, famous Baron and Kenny's (1986) techniques were deployed. As stated by Baron and Kenny (1986), mediation is supported if: independent variable (Role Clarity) related to dependent variable (OCB); independent variable (Role Clarity) relates to mediating variable (Supervisor Support); and mediating variable (Supervisor Support) relates to dependent variable (OCB) and the relationship of the independent variable (Role Clarity) and dependent variable (OCB) is significantly reduced in partial mediation or remains no longer significant in full mediation when controlled by mediator (Supervisor Support). Three different regression analyses were performed to test all these conditions. In Investigation 1, OCB (DV) was regressed on RC (IV). As portrayed in Table 2, significant and positive relationship with  $\beta=0.602$ ,  $p<0.01$ . Therefore, with this, first condition for mediation is satisfied. In Investigation 2; Supervisor Support (MV) was regressed on Role Clarity (IV). Here also significant and positive relationship was found with  $\beta= 0.378$ ,  $p<0.01$ .

Hence, condition two for mediation also satisfies. At last in Investigation 3, hierarchical regression analysis was used in two steps. In the initial step, OCB (DV) was regressed on Supervisor Support (MV) in step 1 and then on Role Clarity (IV) in step 2. As in Table 2, Supervisor Support was found as significant predictor of OCB ( $\beta=0.426$ ,  $p<0.01$ ) and also Role Clarity and OCB relationship was weakened (from  $\beta=0.602$  to  $\beta=0.494$ ) but still remained significant. Therefore, final condition has also been met, but partially. As a result, Supervisor Support partially mediates between Role Clarity and OCB. Also, it can be said that effect of Role Clarity is mediated by Supervisor Support but other parts by other variables or can also be direct. Hence, H4 is supported partially.

Additionally, to further examine substantiation for mediation Sobel-z (1982) test was performed. Here also, partially mediated relationship between Role Clarity and OCB was supported by Sobel test. Hence, this test also provided partial support for H4.

### DISCUSSION

The resultant outcome of the study present support for a positive relationship between Role Clarity and Organisational Citizenship Behaviour (OCB) based upon sample of Indian Business Executives. Results clearly indicate that Role Clarity significantly predicts Organisational Citizenship Behaviour (OCB). Through these results it can be inferred that individuals with High Role Clarity will show high OCB. Role Clarity deals with overall clarity regarding what is expected out of the individual from all the stakeholders around him i.e. management, seniors, juniors, colleagues, etc. Once individual becomes clear in his thought regards expectation, he/she provides extra efforts to fulfill those

**Table 2.** Supervisor Support as Mediator

Variable	$\beta$	t-value	F-value	df	R <sup>2</sup>
Investigation 1: OCB on RC	0.602*	8.243*	42.665*	196	0.421
Investigation 2: SS on RC	0.378*	4.976*	12.950*	196	0.144
Investigation 3					
Step 1: OCB on SS	0.426*	6.299*	39.684*	197	0.397
Step 2: OCB on RC	0.494*	7.247*	39.976*	197	0.352

Note: \*p < 0.01



expectations. Meta-analysis, done by organ (1988) also affiliate with the thought that OCB are those behaviours which colleagues expects from individual but are not listed in any Job Description. Our study supports findings of Konovsky & Pugh (1994) that improved social exchange in terms of clear expectations with colleagues will foster OCB in employees. Role

Support-OCB relationship can also be seen in light of Social Exchange theory (Blau, 1964) and Affective Events Theory (AET) framework. This relationship provides that some form of favourable actions fixated at employees by their supervisors or by management contributes towards creation of positive attitude of employees which oblige them to reciprocate in constructive and valuable ways like OCB (e.g. Eisenberger *et al.*, 2001; Settoon *et al.*, 1996).

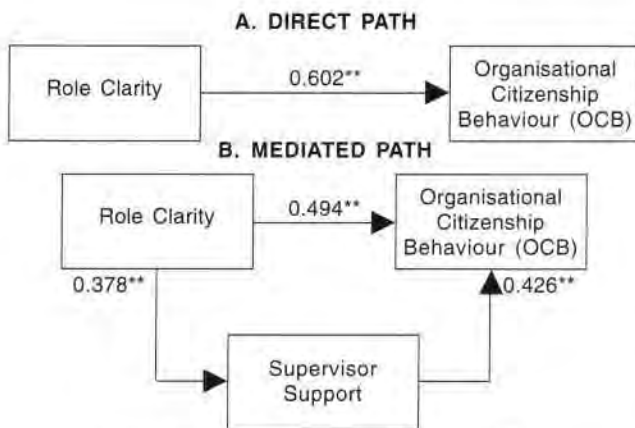


Fig. 2. Summated Mediated Path

Clarity will not come without internal readiness on part of employee, which creates a moral responsibility towards organisation and which employees reciprocate by showing extra role behaviours (Lester *et al.*, 2008).

Findings of the study also highlight the relevance of Supervisor Support for Organisational Citizenship Behaviour (OCB). This study is in response to call made by Podsakoff *et al.*, (2000) to carry out research on the causal relationships among antecedents of OCB. These findings add to increasing literature of supervisor support and its linkage to attitudinal Variables (e.g., Piccolo and Colquitt, 2006). Our results are in confirmation with the two famous meta-analyses analyses (i.e., LePine *et al.*, 2002; Podsakoff *et al.*, 1996a) which stated that there exist a positive correlation between supervisor support and OCB. This proves that supervisory support is supportive in fostering OCB in employees. Another explanation to this could be that after getting Supervisor Support, employees are in good mood generally which may make them help others (Clark and Isen, 1982). Here, Supervisor

Though, earlier studies have recognized the links between Role Clarity and Organisational Citizenship Behaviour (OCB), it is vital to reveal the psychosomatic mechanisms in the relationship. To establish this, Supervisor Support was hypothesized to be mediating the relationship between Role Clarity and Organisational Citizenship Behaviour (OCB). Since Supervisor Support partially mediate the relationship, Role Clarity affect OCB both directly and indirectly as well via perception of Supervisory Support. This finding truly highlights the position of Supervisor in addition to individual variables in fostering OCB. It is in synchronization with Podsakoff *et al.*, (1996b) who established that high supervisor support will lead to high display of OCB in people but under some limited conditions. Although past researches have shown that supervisor support leads to OCB, but underlying mechanism was not researched to a great extent (Jung and Avolio, 2000). Present study is an attempt to in that direction, too. Employees with High Role Clarity are in a better position to control their surrounding environment, and if it is supplemented with support from supervisor as well then employees get empowered both officially as well as psychologically to do beneficial activities towards organisations. Employees feel motivated and develop a sense of attachment towards what they do. More engagement in work and new Entrepreneurial and Intrapreneurship Ideas and Projects are outcomes of this.

## CONCLUSION

After going through the study, it can be said that Organisational Citizenship Behaviour is allowed with both individual as well as organisational traits. Role Clarity though an Individual trait

has dimensions of encouragement from work Colleagues. Together with support from supervisor and other still to be unearthed variables Role Clarity can significantly predict and influence Individual's OCB. Present study is innovative as it established the relationship in Indian context. We made an endeavour to unveil motivational system at core of Role Clarity-OCB relationship. Furthermore, ours is the foremost study to examine these variables together in India. By examining the relationship between Role Clarity, Supervisor Support and OCB an attempt is made to bridge the gap in the literature from India and other developing economies.

### Managerial Implications

To encourage employees to portray OCB, organisation may need to first provide full information regards expectations from all the work colleagues' weather it is written or psychological in nature. For example, an employee should know parameters of his appraisal system, his financial and non-financial decision making limits. Furthermore, it showed that supervisor support increases OCB, organisations may persuade supervisors to provide support to employees. For example, constantly involving them in planning and be empathetic towards their problems. Jobs and Roles with built-in characteristics of feedback and autonomy need to be designed to reduce stress and tension in employees (Jackson and Schuler, 1985). Selection procedure of new recruits may have an assessment test to assess readiness of aspirants to multi dimensional demand fulfilment towards various levels of employees.

### Limitations and Future research Scope

First, since we took cross-sectional data from respondents, scope for causal inferences from relationships was constrained. This constraint could be eliminated by utilizing longitudinal research design. Second, we assessed support from supervisor by taking responses from subordinates; this could give biased results based on perception. Instead, responses from both Superior and Subordinates can be taken to get the complete picture. Third, data of only

198 respondents was taken. Sample size could be increased to get more accurate results. Forth, our study only considered uni-directional relationship between the variables. However, reciprocal relationship can also be studied.

More variables can be added to know the complete and full mechanism governing OCB. Since, focus area of interventions are teams and rarely individual. These variables can be studied on teams and groups as well.

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increase in the number of juvenile delinquents. In Oman, problems of juvenile delinquency seem to be accompanied by the social and economic development occurring since Oman's revival (July 23, 1970).

Omani society is undergoing a rapid social and cultural change. Following oil export in huge quantities, social and cultural changes have followed, especially during the last two decades, to the extent that the very social structure has been transformed. This change and development are reflected in the sudden move from a tribal, traditional society to a modern state. On the other hand, it also brought certain demerits such as individualism, materialism, and deterioration in modes of behaviour as well as decline of social values. Thus, it is hoped that this survey will on the one hand cater to the needs of Oman as a developing country and on the other hand, will strive to identify and, address the effect of delinquent acts. Next, the dimension of the problem, objectives of the survey and the significance of survey will be discussed.

### Statement of the Problem

*In spite of the high tolerance level of the Omani people, they have not been free from the phenomenon known as juvenile delinquency, though juvenile delinquency rates are still very low as compared to those of neighbouring Arab countries or other countries around the world.*

A general review of the official statistics of crime in the Sultanate of Oman suggests that there has been a significant increase in the rate of juvenile delinquency year by year, especially during the last three decades, caused by various factors, mostly emanating from the process of social and economic transformation and related problems. Therefore, this survey focuses on the effects of peers on delinquent acts.

### Objectives of the Survey

The major objectives of the survey are to raise answers to some questions related to the acts of

- b. Profile of Delinquents
- c. Circumstances leading to Delinquency;
  1. Occupation;
  2. Reasons for Delinquents leaving School
  3. Type of Offences;
- d. What is the role of peers in juvenile delinquency?
  1. Number of Companions;
  2. Reasons for Involvement;
  3. Previous Offences;
  4. Satisfaction level with Programmes;
  5. Future plan of action;

### Importance of the Survey

The increased incidence of juvenile delinquency in the Sultanate of Oman has forced the government to give more attention to this problem and to evolve the provision of various nature in order to keep youth away from delinquency. It has been argued that, while

*there has been enough research work focusing on the study of juvenile delinquency in the Middle Eastern and Gulf countries, there has been little attention paid towards the study of juvenile delinquency in the Sultanate of Oman.*

The Ministry of Social Affairs and Labour (2002) gave a serious attention to the problem and seriousness of juvenile delinquency. Over the decades, studies have proved a connection between family factors, peers, socio-economic status and delinquency.

The purpose of this survey is to present the research design and methodological tools of the research. Moreover, survey research methods provide the means by which systematic information can be collected and analysed for wide range of purposes of both scholarly research and policy-making (Mitchell, 1983). To reach the objectives of this survey, therefore, the



researcher decided to use survey research method gathering data through a questionnaire.

### The Survey Methodology

Juvenile delinquency is usually measured with the help of interviews or questionnaires. Although method of interviews was used in some cases and method of questionnaires in others, most researches in the area of juveniles' delinquency employ both the methods. This is because conducting interviews are expensive as well as time consuming. In this survey, the researcher decided to use only single method of using questionnaire in order to measure the quantum juvenile delinquency in Oman society.

The most important and essential data were collected about delinquent juveniles and non-delinquent juveniles by using a self-report questionnaire survey.

The survey was conducted at two sites for the first group (delinquents): Almanoma central prison, juveniles section, located in the north of Oman in Muscat governate; and Arzat central prison, the juvenile section, located in the south of Oman, Dhofar governate. In addition, data on non-delinquent juveniles were collected only from Dhofar governate at four sites: Ebin Khaldoon Preparatory School, Mohammed Bin Al-Khasem Preparatory School, Sa'adia Secondary School, and Sa'adia preparatory school. All these schools are located in Dhofar governate.

### The Samples

For the purpose of survey, the sample was selected as follows: all of the respondents in the

survey were Omani male juveniles. In relation to the sample size there is no clear-cut answer in the literature on the appropriate sample size. A large sample size, however, is not sufficient to guarantee the accuracy of the results. It is true that in some cases, an increase in sample size will increase the precision of the results, but will certainly not reduce bias caused by an inaccurate sampling frame. Therefore, the size of the sample is not in itself enough to guarantee that all will be well (Sudman, Sirken, and Cowan, 1998).

The researcher in this survey decided to take the entire sample available for the first group (delinquent group) (N=128) and to take same number for second group (non-delinquents/students) for the four schools that were selected.

The questionnaire was given to the total number in those two institutions. All delinquents in those two institutions had completed trial of the court and a few of them were still waiting court hearings, about 15 delinquents. The police had brought all the delinquents to the prisons following arrest. All had been formally charged with serious criminal acts, such as theft, immorality crimes, quarrel and attack, assault, inebriety and drugs, vandalism, sexual abuse, harassment and traffic offences.

**Table 2.** Sampling Frame of Non-delinquent Group

The Prison	N	%
Almanoma and Muscat police stations	113	88.3
Arzat and Dhofar police stations	15	11.7
Total	128	100.0

**Table 1.** The Delinquent Sample Distribution by Prison, Number and Percentage

City	School Name	Total number of Students	Missing Data (questionnaire not properly complete)	Total Sample from each School Represented in the Study
Salalah	1. M. Bin Al-Khasam	100	55	45
	2. Sa'adia Preparatory	100	65	35
	2. Sa'adia Secondary	100	70	30
Mirbat	4. Ebin Khaldoon (P&S)	90	72	18
	Total	390	262	128

The sample in the second group (non-delinquent) consisted of two educational stages, preparatory and secondary schools. According to the General Directorate of Education in Dhofar, four schools represent both stages in Dhofar region. Three of these schools are situated in Salalah city in three districts (Al-Qaraz, Central Salalah, and Al-Dhareez) and the fourth one is situated in Mirbat city. The sampling frame of non-delinquents group (students) is presented in Table 2.

### The Questionnaire

The purpose of this survey is to determine the effect of peers on delinquent acts which committed by juveniles in Oman society. For this purpose, the researcher planned to make a comparison between delinquents (N=128) and non-delinquents (N = 128), by means of two separate questionnaires prepared. *Part one* dealt with peers' delinquency and self-reported delinquent acts, each subscale comprised of nine items. Whereas the *second part* of the questionnaire contained 9 questions about the convicted group (delinquents). All these variables will be explained later in the questionnaire preparation section.

#### 1. The Questionnaire Preparation: Peers' Delinquent Acts and Self-report Delinquent Acts

These two scales (peers' delinquency and self-report delinquency) were derived from Al-Jaber's (2002) study, which was about "Unreported juvenile delinquency: A study of juvenile delinquency in the state of Qatar". These two scales were developed to measure the effect of peers' and self-report delinquency acts on juveniles. Therefore, for the purpose of this survey the researcher decided to use these two scales in this survey, to measure the effect of peers and delinquent acts which were committed by juveniles themselves.

#### 2. Validity

"Validity refers to the degree to which an instrument measures what it is supposed to be measuring" (Polite and Hunger, 2009, p. 418). The scales used in this survey are intended to

measure the delinquency effect of peers on delinquent acts which were committed by juveniles in Oman society. The researcher took the following steps to make sure that the questionnaire has higher validity:

1. The questionnaire was reviewed thoroughly by the researcher, social workers and some special officers in department of juveniles in Oman to ensure that the meaning reflects the content of the scales. Therefore, many changes and modifications were made in the original version of the questionnaire.
2. The questionnaire was also shown to two of the eminent sociologists in Oman. Their comments were assessed and some of the questions and statements were modified accordingly.

#### 3. Reliability

Reliability is of central concern to social scientists because the measuring instruments (scales) are rarely completely valid (Nachmias and Nachmias, 2006). This is because measurements in the social sciences are indirect and therefore, more errors are likely to occur when social variables are measured as compared to physical variables (Nachmias and Nachmias, 2006). The degree of reliability is commonly expressed in terms of the consistency of scales or instruments.

Litwin (2005; p.6) defines reliability as "A statistical measure of how reproducible the survey instrument's data are." In other words, the researcher should expect the same results if he applied the same scale on different occasions or with a different set from an equivalent population.

The reliability measure varies on a scale from 0 to 1, where a value close to zero is an indicator of an unreliable scale and a value close to one is an indicator of a reliable measure. When considering measurement reliability, a distinction is made between external and internal reliability. External reliability refers to the degree of consistency of a measure over time, or the possibility of an independent researcher replicating the same study in a similar setting. Internal reliability measures the consistency of



the scale. It is applied to a scale containing several items that are thought to measure different aspects of the same concept (Litwin, 2005). High internal reliability indicates that the different items are measuring a single concept.

Several procedures are commonly used to determine measurement reliability. Among the most common methods are:

1. Test-retest, where the scale is applied to the same group on two separate occasions and then the correlation between the two sets of observation is computed. A high correlation between the two tests is an indicator of high reliability.
2. Parallel forms technique, where the researcher develops two parallel versions of the same scale and applies both forms to the same group. Correlation between the two versions is then computed to obtain an estimate of reliability.
3. Internal consistency is another commonly used technique to assess instrument and scale reliability. Internal consistency determines whether each scale is measuring a single concept and hence the items contained in the scale are internally consistent.

Internal reliability can be measured statistically by two procedures. First, Cronbach's coefficient, alpha, is the most frequently used measure of reliability. This coefficient is named after the 20th-century psychometricist who first reported it in 1951. It measures the internal consistency and homogeneity of a group of items combined to form a single scale (Litwin, 2005). Alpha varies between zero and one and the nearer the result is to 1, preferably at or over 0.8, the more reliable is the scale (Bryman and Cramer, 2007; p.63).

The second measure is item-total correlation. A coefficient of 0.6 is acceptable for exploratory research, although values over 0.7 are preferred (Bagozzi 2004). Borg (1991; pp.218-219) states that: "Correlations below 0.35 show only very slight relationship between variables and have limited meaning in exploratory relationship, whereas a correlation within the range 0.35 and 0.65 shows a strong enough relationship

between variables and is statistically significant beyond the one percent level." Litwin (2005) reported that correlations within the range between 0.25 and 0.55 indicate a strong relationship between variables.

#### 4. The Reliability of the Questionnaire

The instrument comprised two subscales measuring the effect of peers' delinquent acts, and self-reported delinquent acts, based mainly on the instrument developed by Al-Jaber (2002).

For Al-Jaber's (2002) scales, the original values of Cronbach's Alpha were: peers' delinquent acts = .74, and self-report delinquent acts = .76.

For the purpose of this survey, and to be confident of reliability in the Omani context, the researcher decided to examine the reliability of the two instrument scales. Cronbach's Alpha Coefficient was used for testing the two scales contained in the questionnaire:

1. Peers' delinquency acts containing 9 items.
2. Self-report delinquent acts, containing 9 items.

The reliability of the questionnaire scales is presented in Table 3

**Table 3.** Alpha Reliability of Subscales

Scale	Reliability Alpha
1. Peers' Delinquency Acts	.72
2. Self-reported Delinquency Acts	.85

#### The Results of the Survey

It is generally known that officially recorded delinquency represents only a small proportion of the total number of law-breakers in any society (West and Farrington, 1983). In order to test this fact in Oman, it was decided to include in the main investigation a self-reported measure to ascertain the extent of *hidden delinquency* among both the officially recorded delinquent and the non-delinquent groups.

Thus, the 256 males interviewed in the main survey were asked about some delinquent acts, which they may have committed. The list of delinquent acts consisted of 9 descriptions of acts, a selection of relevant statements taken from Al-Jaber (2002). Respondents were asked to report their involvement in nine specific delinquent acts at any time in the previous six months. The questions included, for example, "Have you driven a car without a licence?", "Have you ever sniffed glue or used drugs to get high?", etc. Respondents received a score of 2 if they answered "yes" and 1 if they answered "no". The delinquent acts data was prepared by computing the percentages for each statement in the scale in each group (delinquents and non-delinquents). Subsequently, a t-test was used to examine the total scale of self-reported delinquent acts. Therefore, the higher the total mean, the greater the extent of involvement in delinquent acts and the lower the total mean, the less was involvement in hidden delinquent acts.

In this regard, Table 4 shows the percentages of subjects who reported committing delinquent

acts in the last six months. From the table it can be seen that a high proportion (87.5%) of the delinquent group reported that they had driven a car without a licence, compared with 28.1% of the non-delinquent group. Likewise, the delinquents reported more involvement in the similar other behaviours than non-delinquents. It is interesting, in this section, to look at hidden delinquency in the non-delinquent group. As seen previously, about one-third of the non-delinquent group (28.1%) said they had driven a car without a licence: 26.1% had taken something not belonging to them, even if they had returned it, and a similar proportion had hurt someone with an intention, outside or inside school. Harassing girls was reported by 17.3% and damage to property by 12.8% (public) and 16.5% (private). The lowest proportions were for items 8 and 9; 11.1% admitted drinking alcohols and only 1.7% said they had sniffed glue or used drugs.

As further evidence, it can be seen as well from Table 5 that the mean score of the delinquent group ( $M = 15.9$ ,  $Sd = 1.5$ ) was higher than mean of the non-delinquent group

**Table 4.** Percentage of each Group who accepted their involvement in each Act of Hidden Delinquency

Questions Regarding Delinquent Acts	Responses	Delinquent %	Non-delinquent %
Driven a car without a licence	No	12.5	71.9
	Yes	87.5	28.1
Taken a car without the permission of the owner, even if the car was returned	No	17.2	91.2
	Yes	82.8	8.8
Taken something not belonging to you, even if you returned it	No	28.1	73.6
	Yes	71.9	26.4
Hurt someone adversely outside or inside the school	No	19.5	73.9
	Yes	80.5	26.1
Harassing girls over the phone or in public places	No	17.2	82.7
	Yes	82.8	17.3
Damaged public property such as schools and public parks	No	22.7	87.2
	Yes	77.3	12.8
Damaged private property such as houses and gardens	No	32.0	83.5
	Yes	68.0	16.5
Drunk alcoholic beverages	No	26.6	88.9
	Yes	73.4	11.1
Sniffed glue or used drugs to get high	No	30.5	98.3
	Yes	69.5	1.7



(M = 10.5, Sd = 1.4). By using the t-test, the data shows that the obtained t-test value was ( $t_{(478)} = 36.69$ ) which is larger than the values in the t table (critical table) for the 0.05 level ( $t = 1.96$ ) and the 0.01 level ( $t = 2.57$ ). Therefore, there was a statistically significant difference between the two groups (delinquent and non-delinquent) in respect to hidden delinquency (self-reported delinquent acts).

Additional analysis was used in order to carry out the effect of age in self-reported delinquent acts (hidden delinquency). A one-way ANCOVA (*Analysis of Covariance*) was used. Table 6 represents the results. It was found that there was a significant effect of delinquent group ( $F_{(1,477)} = 1356.31, p < 0.001$ ) after controlling for age.

**Table 5.** T-test Description of Hidden Delinquency (Self-reported Delinquent Acts): Delinquents and Non-delinquents.

The variable	Delinquents			Non-delinquents			t-test	df.
	N	Mean	Std. D.	N	Mean	Std. D.		
Self-reported delinquent acts scale	128	15.9	1.5	352	10.5	1.4	36.69*	478

\*Significance level at  $p < 0.001$

**Table 6.** ANCOVA results for effects of juveniles groups on self-reported delinquent acts controlling for age categories. Tests of Between-Subjects Effects Dependent Variable: Self-reported delinquent acts

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Age	17.656	1	17.656	8.666	.003
Juvenile	2763.222	1	2763.222	1356.307	.000
Error	971.799	477	2.037		
Total	72226.000	480			
Corrected Total	3776.367	479			

a R Squared=.743 (Adjusted R Squared=.742)

## CONCLUSION

It was found that self-reported delinquency is significantly higher among the delinquent group than the non-delinquent group. Although the control group (non-delinquent) did not reveal a high level of delinquency, it can be seen that there was self-reported hidden delinquency among the non-delinquent group. On the other hand, it can be seen that there was more self-reported delinquency among delinquents than non-delinquents.

However, it must be remembered at this stage that the self-report measure was intended to explore hidden delinquency and is dependent

on the extent of concealment and exaggeration by the interviewees themselves. Nevertheless, it reveals a comparatively small proportion of hidden delinquency among the Omani male school children sample (the non-delinquent group). Problems concerning the measurement of known and unknown delinquency are but one complication of the fundamental question of why juveniles in Oman drift into delinquency in the first place. The next section of this survey will focus on the juvenile offenders' profile.

## Profile of Delinquent Offenders

This section will provide a profile of the delinquent group, focusing on some details

about the juveniles' group situation and circumstances, namely, circumstances leading to delinquency (occupation when they were convicted; whether they had left school and if so, the reasons; what they were doing before custody; types of offences; number of companions; reasons for involvement; and previous offences) and future goal (plans after release from prisons and views about the time to be spent after custody).

### Circumstances leading to Delinquency

#### Occupation

This section will give some information about the delinquents' problems at school and their education before custody, and whether they were working, studying, or unemployed. In every country, education plays a very important role in a juvenile's life, and is given a special significance in relation to delinquency causation. Friday (1990) pointed out that: "The school is seen internationally as an important factor in delinquency causation, since it is both a socializing and integrating element and ultimately the source of economic rewards" (Friday, 1990, p.119).

Thus, educational failure or drop-out from school, especially at a younger age, can have serious consequences. Toby (1989) contended that those boys who experienced educational failure are likely to show a reduced 'stake in conformity' and therefore they become more prone to delinquent association and activities. He suggested that: "The longer a youngster stays in school, the smaller are the chances that he will commit crimes." (Toby, 1989, p. 141)

The Youth Lifestyle Survey (YLA) fully confirmed the importance of school and education. It found, for example, that boys who disliked school were three times as likely as others to be offenders, and girls four times as likely (Flood-Page, 2000). Thus it seems probable that school does have a big role to play in teaching children conforming behaviour, and in providing bonds or reasons for remaining law-abiding.

Table 7 shows the distribution of the convicted group according to their occupations when they were brought to the prison. From

the table it can be seen clearly that exactly half (50%) of the sample had left school, and the remainder were divided between the other two categories (14.1% working and 35.9% unemployed) before being admitted to the prison. In this situation it can be asked: what is the reason for committing delinquent acts for both the studying group and the non-studying (working and unemployed)? The answer will be seen later through the analysis.

Regarding the working group and unemployed, Vold and Bernard (1996) conclude that crime and unemployment are directly correlated; that this relationship is not consistently strong; and that it is probably strongest and most consistent in the case of young males. In addition, Allan and Steffensmeier (1999) found that unemployment was most clearly associated with the arrest rates of 14-17 years-old males (juveniles) for property related crimes. Furthermore, in a very different study of unemployment in parts of London, Hagan (2003) offers a quite different finding. He accepts an association between the overall rising trends in unemployment and crime, but argues that at micro level it was early criminal behaviour and its continuation over time which tended to lead to adult unemployment.

Occupation was logically related to age and education level. From the sample age mean was  $M = 16.15$  for delinquents and about 89.1% were educated up to primary and preparatory school level. Thus, they would only be able to get low paid jobs.

On the other hand, among those who had left school, about 65% had done so between six months and one year before their conviction, and the remainder (35%) more than one year.

**Table 7.** Occupation of Delinquent Group Before Being Brought to Prison.

	N	%
Working	18	14.1
Studying	64	50.0
Unemployed	46	35.9
Total	128	100.0



Table 8 presents the reasons for leaving school, reflecting to a great extent the problems of the Omani education system. One of the main problems was expulsion. The table results confirm the extent of this problem, as 21.5% of juveniles had failed more than two years and been forced to leave school, mainly due to their age or their failure to pass the examination, and the same proportion (21.5%) left to follow friends. Moreover, 12.5% left because they disliked school and teachers. These findings can be related to the fact that the education system and school administration had not been sufficiently expanded to offer every child a place in the next stages (preparatory and secondary levels). Thus, many youngsters aged between 14 and 18 years found themselves hanging around on the streets with no occupation. They were too old to stay in class, and they were too young and inadequately qualified for a job. More than one third (34.4%) had left for reasons directly or indirectly related to the prevailing education system.

**Table 8.** Reasons for Delinquents leaving School

If you have left school, what was the reason?	N	%
Looking for a job	10	16.4
I had failed more than twice	14	21.5
I dislike school and teachers	8	12.5
Following my friends	14	21.5
Other	18	28.1
Total	64	100.0

From our data, it can be seen clearly that 16.4% of the respondents who had left school did so to look for jobs. This may have been due to their families' financial circumstances, i.e. family total income, since 80% of the families had a low income (100-399 O.R). With respect to following friends, no doubt peers or friends have an effect on each other, thus we can see juveniles often smoke or use drugs because of the influence of friends. Therefore, "There is a very strong tendency for boys to have friends whose activities are congruent with their own attitudes" (Hirschi, 1972, p: 159).

*Type of Offences*

Table 9 shows the most recent offences committed by the delinquents, as a result of which they were sent to the prison. It is not surprising that theft offences alone account for nearly two thirds (61.7 %) of offences. Theft is apparently the most common offence among Omani delinquent juveniles. Immorality offences came second (8.6%) along with inebriety and drugs. Although this may not seem a very high figure, these offences are currently considered the most dangerous phenomenon in the Omani youth community, since they are viewed as evils brought into the country as a consequence of social changes, and also as a result of the rapid changes of recent years. The remaining offences are not considered very dangerous, although assault and vandalism accounted for 7% and 6.3% respectively, whereas quarrel and attack, traffic offences, murder and harassment together accounted for only about 7.8%.

**Table 9.** Types of Offence Committed by the Delinquents

Type of offence	N	%
Theft	98	61.7
Immorality	11	8.6
Inebriety and drugs	11	8.6
Assault	9	7.0
Vandalism	8	6.3
Quarrel and attack	4	3.1
Traffic	4	3.1
Murder	1	0.8
Harassment	1	0.8
Total	128	100.0

**Table 10.** Number of Companions Involved in the Incident

Number of companies	N	%
With three or more	65	50.8
With two friends	29	22.7
With one friend	25	19.5
Alone	9	7.0
Total	128	100.0

### Number of Companions

In order to gain some insight into the peer group as a reference group for juveniles, it became necessary to have an idea of whether the juveniles committed the delinquent acts alone or in small or large groups. Table 10 shows the distribution of respondents according to the number of companions involved in the same offence.

In control theory, peers are not necessarily gangs, and can be loose groupings of friends or just single companions (see Flood-Page, 2000). Furthermore, in control theories, peer groups can, like all other attachments, act for or against law-abiding behaviour. There are, however, certain peer groups whose members clearly support delinquency, or who at least do not censor such behaviour. In this group, it may be that some types of criminality are actively encouraged and given are glorified, or merely that they are tolerated and not actively discouraged. It is important to note that contact with a criminal peer group may only arise because the individual is already willing to commit crime. In this case the group only facilitates the activity by, for example, teaching the skills required (Williams, 2001).

It can be noted that 50.8% of respondents committed their offences in a large group (with three or more companions), 22.7% with two friends and 19.5% with one friend. Children who commit their offences individually accounted for only 7%. In other words, about 93% of the sample had shared the offence with at least one friend.

Many studies attempt to examine the possible role of the peer group in persistence or in desistance from anti-social behaviour (Loeber, Stouthamer-Loeber, Kammen, and Farrington, 2001). The findings indicate that being part of a delinquent peer group is associated with persistence, whereas having few delinquent peers is associated with desistance.

Furthermore, the National Youth Survey (NYS) findings (Warr, 2003) showed that attachment to parents on its own did little to counteract peer group influences. On the other hand, spending much leisure time with the family did reduce, or even eliminate peer influences.

### Reasons for Involvement

It is useful to display here the reasons as mentioned by the juveniles themselves for their involvement in the delinquent acts which caused them to be brought into custody, in order to shed light on their feelings about delinquency and their justifications for what they had done. Table 10 shows the main reasons mentioned by the respondents for their acts. Although it was found that the majority of the respondents were involved in theft (61.7%), this table shows that only 35.2% of those juveniles mentioned the need of money, whereas the main reason mentioned was following friends (46.1%). However, embarrassment may have prevented some youths from mentioning the need of money as a reason for what happened, or they might have preferred to throw the responsibility for their acts on the shoulders of friends due to moral and social considerations, in order not to show their families as mean or poor. In any case, there is a clear indication of the importance of companionship in young people's lives. Moreover, the table indicates that 18.0% of the whole sample reported that they committed offence for no reason, but just to pass the time, and only 0.8% mentioned other reasons. Reference to passing the time leads us to irk of the role of leisure time in young men's life, particularly for juveniles. The lack of recreational facilities and consequent feelings of boredom have been regarded by many researchers as a predisposing factor to delinquency (Friday, 1990). In the United States, Gold (1973) suggested that: "The higher the quality of recreational and educational facilities, the more attractive the community will be to its youngsters, and consequently, the less likely they will be delinquents." (Gold, 1973, p.39)

**Table 11.** Reasons for Committing Offences: Frequency and Percentage.

Reason for involvement	N	%
Following friends	59	46.1
Need of money	45	35.2
Spending time	23	18.0
Other	1	0.8
Total	128	100.0



In relation to this finding, Agnew (2001) found that, on the whole, peer effects were greater when people were closely attached to delinquent peers, when they spent a lot of time with them, when the group was overtly approving of delinquent activities, and where peer group activities served to create pressures to join in anti-social behaviour.

In fact, according to previous findings of Tables 10 and 11, it seems that the impact of delinquent companions is quite visible, according to the following indications:

- i) The majority (73.5%) of the sample (delinquent group N=128) had committed their offences in groups, with more than two persons.
- ii) A large number of the delinquent sample (46.1%) mentioned the desire to follow or please friends as the reason for committing the offences.

**Previous Offences**

Measuring the previous history of offences of the juveniles might enable us to understand the magnitude of the problem in the sample society. From Table 12, it can be seen that only 59 respondents (46.1% of the whole sample) had a previous history of delinquency, whilst 69 respondents (53.9%) did not.

The table shows that 31.3% had offended once previously, and were therefore in prison for the second time; 10.9% had two previous offences and 3.9% had three or more. This figure gives a cause for concern as an indication of the failure of the juvenile departments or the responsible authorities to reform and rehabilitate these offenders. In other words, this raises

**Table 12.** Number of Previous Acts

Were you involved in previous acts?	N	%
None	69	53.9
One	40	31.3
Two	14	10.9
Three or more	5	3.9
Total	128	100.0

questions about the effectiveness of the preventive and rehabilitation programmes carried out by the responsible authorities in the prisons. To shed light on the recidivism problem, some staff in the prison was interviewed (social workers in the juvenile department). They mentioned various factors and pressures, which are faced by child after leaving the prison. For instance, one of them said, "We do our best with the juvenile but we cannot provide him a new environment or change his parents." That means the juveniles, after release, are going back to the same environment as before and their parents in some cases do not support and supervise them properly. Therefore, there was no follow up of juveniles after their release either by their families or the local institutions, to ensure that they were living in good conditions and in a better environment. On the other hand, about 54% of the sample did not have any previous history, which amounts to about half of the group. In addition, it might be due to the failure of the local authorities, such as the religious, educational, social and mass media institutions, in providing successful preventive programmes for youths.

**Satisfaction level with the Programmes**

In order to understand more about the juveniles' situation in the prison (juveniles department) and their relationship with the place where they must live for at least a few months, juveniles were asked, "Are you satisfied with the services and programmes provided in the penitentiary?"

The results are in Table 13. Contrary to what we expected, the table shows that the majority of the respondents (59.4%) were satisfied with

**Table 13.** Satisfaction with the services and programmes in the penitentiary.

The Question	Category	N	%
Are you satisfied with the services and programmes, which were provided in the penitentiary?	Yes	76	59.4
	No	52	40.6
Total		128	100.0

what was provided by the penitentiary. The major sources of satisfaction given, when some of the juveniles were asked, were the staff's kindness and nice treatment. Moreover, some of them even mentioned that they had found conditions (such as good food), better than those at home. That means that about 60% of the convicted juveniles felt that the environment in penitentiary was better than the outside environment. Those who were dissatisfied (40.6%) mentioned ill treatment by some staff, and lack of recreational facilities. In brief, it seems there are no complaints about inadequacy of catering, or services, but recreational facilities need to be provided.

**Views of the Future**

This part is very important, because it highlights the juveniles' future plans and intentions about what to do after leaving the prison and the respondents' feelings about their actions. This includes the attitudes of youth towards their future after the hard experience of being jailed and punished, in most cases for the first time, and being kept out of the natural, social and cultural environment of the society for a long time. Secondly, we are mainly concerned with the problems, which they might think of or expect to encounter after being released.

Table 14 shows the distribution of the respondents according to their responses to the question, "What do you intend to do after leaving the penitentiary?"

It can be seen that 41.4% of the juveniles planned to look for a job. On the other hand, the attitudes of juveniles toward school were not very positive, as indicated by the fact that only

**Table 14.** Future Views after Leaving the Penitentiary

What do you intend to do after leaving the penitentiary?	N	%
Looking for a job	53	41.4
Going back to school	48	37.5
Joining a training institution	14	10.9
Do not know	13	10.2
Total	128	100.0

37.5% of the students desired of going back to school. A further 10.9% mentioned that they would join a training institution, which is the most suitable place for such children, in view of their ages and qualifications, as well as the current needs of the country. Moreover, it was found that 10.2% of the juveniles had no clear idea about what to do in future.

Regarding juveniles' perception about their offences, it can be seen clearly from Table 15, that almost all (96.9%) felt regretful and contrite about committing their delinquent acts, while only 3.1% said they felt no regret. This result suggests that the rehabilitation, reformation and correction of delinquents gave good results, in terms of encouraging juveniles' resolve to be useful citizens in future.

**Table 15.** Feeling Regretful or Contrite Regarding their Previous Acts

	Categories	N	%
Are you feeling regretful or contrite about your previous actions?	Yes	124	96.9
	No	4	3.1
Total		128	100.0

**Summary of the Survey**

On the basis of the data presented in this survey, we intend to clarify various aspects of the juveniles' offenders' profile and hidden delinquency among the two groups (delinquents and non-delinquent). The survey has presented a number of points representing the main characteristics of the juveniles included in the sample, as follows:

1. All of the juveniles under study were males, since a few female juveniles are held in custody and, especially due to cultural constraints.
2. The majority of the delinquent group came from the largest and the most populous regions in Oman (Muscat and Al-Batanah); 63.3% of the delinquent group was from these two regions alone. This result comes in line with the literature, that there is an association between crowded regions and delinquency.



3. Regarding educational level, 32.8% of the delinquent group had primary education, 56.3% had preparatory and only 10.9% had secondary level, whereas in the non-delinquent group, 49.1% had preparatory education and the remainder were educated up to secondary school level. That means there was an association between low educational level and delinquency.
4. Regarding self-reported delinquency acts; it was found that self-reported delinquency was statistically quite higher among the delinquents than among the non-delinquent group.
5. Regarding occupation of delinquent offenders, 14.1% were working, 50% studying and 35.9 unemployed.
6. The main reasons for delinquent offenders leaving school were repeated failure (21.9%), following friends (21.1%), and looking for a job (16.4%). In addition, 12.5% disliked school and teachers, and 28.1% left for other reasons.
7. The main offence committed by juvenile offenders was theft (61.7%), whereas immorality related and inebriety or drugs each accounted for 8.6%.
8. The majority (93%) of the sample had shared the offences with at least one friend.
9. The most important reasons or justifications given by juvenile offenders for committing their offences were desire to imitate friends (46.1%), followed by the need of money (35.2%) and to pass the time (18%).
10. The majority of juvenile offenders (53.9%) had no previous history of delinquency.
11. The majority of offenders (59.4%) were satisfied with what was provided by the penitentiary.
12. Regarding plans for the future after leaving the penitentiary, 41.4% of offenders intended to look for a job, 37.5% mentioned going back to school, 10.9% wanted to join a training institution and 10.2% had no clear idea.
13. With respect to their feelings about their offences, almost all (96.9%) felt regretful and contrite.

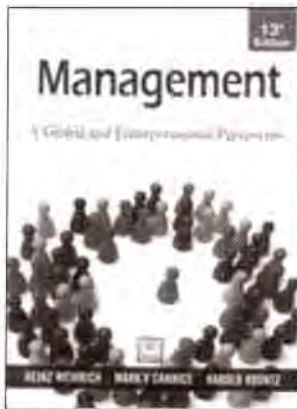
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## Book Reviews



**Management:  
A Global and  
Entrepreneurial  
Perspective**  
Heinz Weihrich,  
Harold Koontz and  
Mark Cannice  
13<sup>th</sup> Edition  
McGraw-Hill  
Education  
ISBN: 978-007-  
132613-1

This new edition of *Management* integrates theory and practice with a focus on global as well as entrepreneurial perspectives.

### Salient Features

- All chapters updated with current international and entrepreneurial perspectives on management.
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This book focuses on the current international and entrepreneurial perspectives on management. It contains new interviews with leading entrepreneurs, venture capitalists, executives, and attorneys from Silicon Valley bringing current insights to the principles of managing. It



provides significant additional focus on the managerial environment in India and China through cases and perspectives throughout the text. It has new theoretical content on the blue ocean strategy, balanced scorecard, and decision-making heuristics. It depicts integration of the Value Chain concept with the systems approach to management.

Management integrates theory with practice with the objective of helping its readers in developing sound concepts and in applying them in their managerial career. This edition builds on its global focus by incorporating new examples from leading world organizations. It also looks at entrepreneurship in a big way to illustrate that individual and organizational entrepreneurship is a major managerial challenge and opportunity in the 21st century. Examples and cases of entrepreneurial innovation have been integrated throughout the text. This book will be the most suitable text book for the students and teachers of business management, and also a useful source of reference for practitioners in the field.

Neha Vashistha  
Shobhit University, Meerut

Marketing Management—  
Global Perspective,  
Indian Context

**Marketing Management—  
Global Perspective,  
Indian Context**  
V.S. Ramaswamy and  
S. Namakumari  
5<sup>th</sup> Edition  
Macmillan India Limited  
ISBN: 978-125-902641-6

*Marketing Management Global  
Perspective, Indian Context*

brings forth a completely new perspective in the world of marketing that transforms your outlook on this field. It forces you to unlearn a lot of things you might have learned in the classroom in order to be able to learn a few new things.

The first part of the book is on adopting a new perspective to understanding marketing. It

contains chapters on the fundamental concepts of marketing and how marketing helps to create and deliver value.

The second part is about the global and national relevance of marketing and its basics, the domestic and global environment with respect to marketing, and the challenges faced in marketing in a globalized and liberalized India.

The third part covers topics such as how to develop a marketing strategy, how to carry out planning strategically in the corporate world, planning marketing techniques at the business level, how to formulate a strategy, and varied approaches on marketing strategy.

Part four consists of topics such as how to analyse one's customers and how to select markets, understanding the behavior of consumers, analysis on the Indian markets, the behavior and expectations of Indian consumers, segmentation of the market, and orientation of value.

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The sixth part of the book is on the management of supply chain and distribution logistics, channels of marketing, manufacturer's perspective on marketing, and also contains case studies. The case studies covered are on Indian Paints with respect to distribution strategy and on Titan Watches with respect to channel management.

Part seven of *Marketing Management Global Perspective, Indian Context* deals with promotion, pricing and pricing for capturing value, how integrated market communication helps build values and conveys them, advertising management, personal selling, sales promotion, and sales management.

Part eight covers topics like how to support and control marketing effort, marketing research, measuring demand, marketing information, sales forecast, and marketing control.

The ninth part is about marketing for



services, special fields pertaining to marketing, and the changing scenario on rural marketing in the Indian context.

Marketing Management: An Indian context and global Perspective has been successful in offering a learning product that combines the excellent content that Ramaswamy has done with examples and case studies from a relevant Indian viewpoint. The 5th Edition builds on the strengths of the previous editions, with an emphasis on highlighting emerging market trends to help students stay relevant in today's fast-changing marketing environment. Marketing Management is typically taught through case studies, and is application-oriented. It is therefore important to showcase companies and brands that have been successful in their marketing strategies. An effort has been made to ensure that familiar Indian and international brands/companies are featured. This enables students relate to the analyses of these case studies and vignettes. Framework / Approach the 5th Edition makes an effort to reflect the changes in marketing management. It now includes (1) Global brand names that have marketed themselves successfully throughout the world, (2) Emerging markets and trends, and (3) A greater focus on technology. The way of mentioning of the facts are quite lucid and crisp along with some brilliant examples but lacks a bit of on-look points regarding marketing details and its perspective. The content wise segmentation and the various illustrations are good, only part which disappointed me is the presentation in few chapters; cases can be even more elaborate.

*Marketing Management Global Perspective, Indian Context is a transformational book on marketing that aims to change one's perspective on the subject.*

Abhishek Kumar  
Shobhit University, Meerut



**Supply Chain Management: A Managerial Approach**  
Amit Sinha and Herbert Kotzab  
Tata McGraw Hill  
ISBN: 978-007-133343-6

The book deals with the concepts of Supply Chain Management with a managerial approach. This book is well written for post graduate students of management.

The book has been divided into six parts & having twenty chapters.

The authors have adopted a systematic approach to the subject matter.

In part I, there are 2 chapters having topics like Supply Chain Management, its strategy, phases for decision making in supply chain management, challenges as well as supply chain performance measurement including purpose, barriers etc.

In part II, there are 3 chapters covering topics like Supply chain data management, supply chain transaction data designing of supply chain network, inventory management including policies of inventory.

In part III, there are 4 chapters. These chapters cover topics like demand forecasting & management, supply network planning including aggregate planning strategy, production planning & scheduling, and transportation management including elements, role and technology.

In part IV, there are 3 chapters having topics like Sales execution customer relationship management, sales order flow, production execution, workforce management.

In part V, there are 2 chapters covering topics like procurement, suppliers relationship management, IT application in SCM, IT integration & SCM automation & supply chain Business Intelligence.

In part VI, there are six chapters having topics like practices of SCM in different fields like



Automotive Industry, Pharmaceutical Industry & in Oil & Gas Industry, FMCG Industry, Personal Computer industry and in Fashion Industry.

The authors compile cases in the end of the few chapters as well as they included a Supply Chain Game which can help to students in understanding SCM in a better way. This book covers all most all aspects of SCM but the authors should more cases and cases after each chapter as well as should give more games.

Neha Tyagi  
Shobhit University, Meerut



**Human Resource Management**  
Phillips Gully  
South-Western  
Cengage Learning  
ISBN: 978-1-111-53355-7

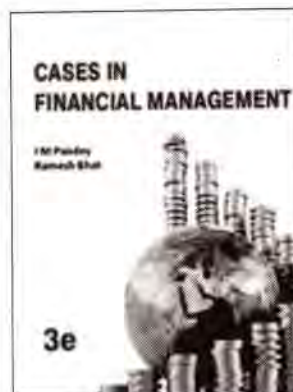
The book entitled "Human Resource Management" has been designed and developed focusing Human Resource Management on developing students personal and managerial skills by (1) Helping student understand the role of HR in organiza-tional effectiveness as well as their personal career success; (2) Enabling students to understand how to flexibility apply the HR concepts that are appropriate for different problems or situation, and how HR both influence and is influenced by business strategy; and (3) creating an under-standing of the HR context by embedding the important concepts of ethics, diversity, competi-tive advantage and the global context throughout the book is structured as an under graduate as well as post graduate text book and is well written book in the field of human resource management. The text of this book has been organized in 14 chapters as follows:

Chapter-1 reviews the importance and context of human resource management while Chapter-2 describe the role of human resource in business and Ethics and social responsibility.

Chapter-3 deals with diversity of organization. Chapter-4 utilises the knowledge of managing human resource planning. Chapter-5 covers the concept of sourcing and recruiting. Chapter-6 covers the selection and hiring of employees. Chapter-7 introduce training and development programme for employee. Chapter-8 focuses on Performance management of employees. Chapter-9 deals with compensation management. Chapter-10 target designing incentive plans. Chapter-11 deals with managing benefits. Chapter-12 promotes employees wellness, and security. Chapter-13 Deals with creating positive employees relation. Chapter-14 wrap up the how to manage the employee turnover.

This book is a complete guide with integrated case supplemented with interactive online videos develops students personal skills and give them experience in applying various HR concepts.

Anshu Choudhary  
Shobhit University, Meerut



**Cases in Financial Management**  
I.M. Pandey and  
Ramesh Bhatt  
Tata McGraw Hill  
Education Private  
Limited  
ISBN: 978-0-07-133342-9

This book thoroughly portrays the shift in the focus of financial management from raising of funds to utilization of funds, and its consequential impor-tance in corporate decision making. This book has been divided into five parts, and studies 62 cases covering a board spectrum of topics have also been described. First part includes cases on Financial and cost analysis, while second part covers working capital management and finances. Third part deals with the capital budgeting decisions and cost of capital fourth part introduces the cases on



financing decision, dividend policy and leasing and fifth part contains the cases on mergers, acquisitions, valuation and international finance. 62 cases covering a broad spectrum of topics and represent various industries of different-size groups-both small and large companies to provide a wide coverage of different situations and problems faced by financial executives. The coverage and content would help students acquire factual, material and procedural skills. Each case generally emphasizes one key issue for discussion in the class. This book is intended for students pursuing postgraduate studies in

management, commerce, accounting finance control. It would also provide hands-on experience to the students pursuing courses of Chartered Accountancy, Cost accountancy, Management accountancy, Company Secretary ship, Financial analysis offered by various professional bodies. The book would also be of great help to the financial executives, who wish to update their knowledge about recent thinking in financial management and to improve their ability of making the right financial decisions.

Asma Khan  
Shobhit University, Meerut

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*NICE Journal of Business*

(Half-yearly Journal of Shobhit University, set up by NICE Society, Meerut)

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(See Rule 8 of the Newspapers (Central) Rules, 1956)

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I, Kunwar Shekhar Vijendra, do hereby declare that the particulars given above are true to the best of my knowledge and belief.

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*Publisher*



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*NICE Journal of Business* invites academicians and professionals to contribute research papers, articles, abstracts of doctoral dissertations, major research project reports, case studies, comprehensive bibliography, and book reviews. The following are the **guidelines** for the authors:

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  - (i) C.P. Agarwal, "*Non linear fiber optics*", Academic Press, San Diego, 2006.
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  - (iii) For books written by two or more authors:  
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  - (iii) For journal articles:  
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  - (iv) For unpublished Ph.D. theses and M. Phil. dissertations:  
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