



# THE INDIAN JOURNAL OF COMMERCE

Quarterly Publication of the Indian Commerce Association

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No. 1

January-March 2011

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**Prof. Nawal Kishor – Managing Editor**



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## **Buying Behavior and Motives of Consumers**

### **A Study of Selected Electronic Products**

SHISHUPAL SINGH BHADU AND PRAGYA PRIYADARSHINI HARSHA

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Consumer behavior in the real world often differs from that predicted by economics and policy. Drawing together evidence from behavioral economics and marketing, this paper sought to explore consumer behavior and buying motives relating to the purchasing of selected electronic products and thus helpful for consumer durable companies in deciding and implementing their sales strategy for the promotion of household electronic products. The present study is conducted on 400 buyers of selected electronic products –refrigerator, television, and washing machine, in Udaipur city of Rajasthan. A structured questionnaire was distributed to the buyers contacted at their residence/workplace at their convenience which include their personal information and they were asked about the brand of the electronic product they had purchased, selection criteria for a particular product, main role player of purchasing a particular product, source of information and buying motives for selecting the product.

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#### **Introduction**

Consumer behavior means in its simplest form selection, purchase and consumption of goods and services by consumers for satisfaction of their wants. The consumer buying behavior is a complex process as a number of internal and external factors influence the buyer's decision making and consumption pattern. The study of consumers helps firms and organizations improve their marketing strategies by understanding issues such as the psychology of how consumers think, feel, reason, and select between different alternatives (e.g., brands, products); the psychology of how the consumer is influenced by his or her environment (e.g., culture, family, signs, media); the behavior of consumers while shopping or making other marketing decisions; limitations in consumer knowledge or information processing abilities influence decisions and marketing outcome; how consumer motivation and decision strategies differ between products that differ in their level of importance or interest that they entail for the consumer; how marketers can adapt and improve their marketing campaigns and marketing strategies to more effectively reach the consumer. In most cases, other external factors (for example price, special offers, brand loyalty and the type of product) all played an influential role in purchasing decisions (FSA 2009).

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**Buyer Behavior Model:** The Howard Sheth Model explains the behavior of consumers as a result of a behavioral input output system. John Howard and Jagdish Sheth propounded this model in 1969 published in the theory of buyer behavior. This model explains the process as: inputs in form of stimuli, output as attention to given stimulus ends with purchase, with 'hypothetical' variables (as they can't be measured directly) affecting perception and learning in between inputs and outputs. Thus this model is categorized as system model in which human being is analyzed as a system with stimuli as system input and behavior as the output of the system.

**Buying Process:** There are different processes involved in the consumer behavior. Initially the consumer tries to find what commodities he would like to consume among all the options available to him, and selects the one which promises him a maximum utility among all. After this he determines his capacity of spending money for that particular commodity and, last but not the least he analyzes the comparative prevailing prices of commodities and takes the decision about the commodity which he should consume.

### **Objectives**

The main objectives of research paper are:

1. To identify the factors influencing the selection and purchase of household electronic products.
2. To study the factors affecting consumer's purchase behavior.
3. To find out the brand preferences of the consumers.
4. To identify the motives involved in purchasing household electronic products.

### **Review of Literature**

In Rubinson and Baldinger (1996) point of view while brand recognition may serve to reinforce buying habits, consumers exhibit much lower year-to-year brand loyalty than is often anticipated, with only a small percentage of consumers exhibiting what can be thought of as strong loyalty to particular brands. In Blythe's (2002) word, Consumer behavior refers to the mental and emotional process and the observable behavior of consumers during searching, purchasing and post consumption of a product or service. Batra and Kazmi (2004) in their book examined that the purchase decision of certain products is primarily based on feeling based choice.

Broadbent (2007) concluded in his research that despite claims that advertising creates consumer demand, attempts to convince consumers to buy a new product through advertising will do little more than stimulate initial sales. Only successful trials and the subsequent repeated buying of a product will actually lead to the maintenance of consumer demand. Dorin (2007) in his research paper stated that fashion affect consumer's behaviour in electronic commerce environments. However, the study found inconsistent results between different dimensions of perception and its effects on buying decision.

Kotler (2008) defines consumer behavior as study of how individuals, groups, and organizations select, buy, use and dispose of goods, services ideas or experiences to satisfy their needs and desires. Ariely (2008) connotes in his research article that when faced with two choices that are difficult to compare, a third option (a 'decoy') can sway our decision asymmetrically (known as the 'asymmetric dominance' effect). This means that consumers' preferences towards two options tend to change when also presented with a third option.

Lars (2008) in his research article mentioned that how consumer motivation and decision strategies differ between products that differ in their level of importance or interest that they entail for the consumer ; and how the consumer is influenced by his or her environment (i.e. culture, family, signs, media ). Sinha (2008) in her research article found that the purchase made by consumers is mainly to satisfy their demands and to solve the underlying problem.

Shove (2009) has argued that in order to understand contemporary patterns of consumption, we need to consider the everyday practices that constitute our lives. Perhaps the question should not be whether or not people buy energy or water efficient washing machines, but why people feel the need to wash their clothes so much more frequently than they have in even the very recent past? If the washing of clothes is determined by socially constructed ideas of hygiene and 'freshness' as well as external (and completely incidental) factors like the weather as research suggests. (Defra 2008), it is as important to understand how these factors contribute to behavior as it is the in store promotions that might affect consumers' choice of washing machines. Choudhary (2009) in his research project suggested that make long term relationship with the consumer by providing good environment and equally handle any grievance about the product by setting up consumers complains office.

**Branding and Recognition Heuristic:** Alreck & Robert (1999) studied in their research that a product or brand preference might be built through one or more of the theories behind the promotion strategies which motivate and stimulate consumer brand preference through the ideas of Maslow's hierarchy of needs. Simple brand preference building is an effective mechanism to present the product or brand name and a particular need through constant and simultaneous repetition.

**Information Provision, Reliability and Sources:** A common feature of standard economic thought is the belief that, when individuals make poor choices it is the result of misinformation or a lack of information. The type, complexity and amount of information provided, and the way in which it is presented, all have a significant impact on the likelihood of people reading and understanding it. In the UK, research has found that consumers are willing to spend time reading a lot of available information (especially 'small print') and that the formal, legal language of much information is confusing.

**Role of Individual Member of Family of Consumer Behavior:** Lee & Beatty( 2002) found that the final outcome stage has been increasingly penetrated by adolescents and that there may be merit in reconsidering the role of

children in family purchases at all stages of decision making. Belch et al (1985) reported a lower level of children's influence compared to that of the parents regarding both how much to spend and where to purchase using a quantitative approach. The changing structure of the family unit also may influence the role of children in decision making (Rindfleisch, Burroughs & Denton, 1997). As such, children are now increasingly raised in not just traditional families but also step-parent and single parent families (Haskey, 1998). In addition, the supposed 'marked demise' of gender differences in family buying decisions (Engel et al, 1990) towards a more egalitarian approach may affect various aspects of consumer behavior with more modern families expecting more involvement from adolescents.

**Role of Husband and Wife in Making Choice for Various Household Products:** Researchers like Qualls (1987) have studied on the role of husband and wife in household decision making. In case of expensive products and services, husband and wives engage in more joint decision making. The market needs to determine which member normally has the greater influence in the purchase of a particular product or services either the husband or the wife, or they have equal influence.

**Buying Motives:** People buy to satisfy all types of needs, not just for utilitarian purposes. According to Duncan, 2005, consumer motive is defined as "internal impulses that when simulated initiate some type of response." Consumers are continuously reacting to their internal impulses as well as the external environment. Since internal impulses and the external environment also interact, resulting in psychological motivations to fulfill needs and wants, Kim and Jin (2001) argue that consumer motives are known to be the drivers of behavior that bring consumers to the retail store.

### **Research Methodology**

The research design used for the research problem in hand is causal research as the objective is to determine which variable might be causing certain behavior, i.e. whether there is a cause and effect relationship between variables. In order to determine cause and effect, it is important to hold the variable, that is assumed to cause the change in the other variable(s), constant, and then measure the changes in the other variable(s). This type of research is very complex and the researcher can never be completely certain that there are not other factors influencing the causal relationship, especially when dealing with people's attitudes and motivations.

**Independent Variables:** (a) brand of the product, (b) criteria like price of the product (economical aspect), technology used in product (technical aspect), brand name and recognition of company (goodwill and quality), (c) Source and medium of information, (d) Each individual member of family (including spouse) plays a very influencing role, (e) Consumer motive (quality, goodwill, need, etc.).

**Dependent Variables:** (a) consumer behavior, and (b) consumer buying motives

**Product Class:** In this study the product class is household consumer electronics durables. Selected household products in the product class are television, refrigerator, and washing machine.

**Sample Design and Sample Size:** The sample design adopted for the research problem in hand is convenience sampling. The sample size for the study was 400 consumers selected randomly and the sample unit of the study includes male and female buyers of selected household electronic goods. The sample research area for the study in hand was Udaipur city of Rajasthan.

**Methods of Data Collection:** Both the primary and secondary data were collected. The primary data for the study was collected directly from target respondents through structured questionnaire. This questionnaire includes the personal information about the respondents. The questions asked to respondents were brand of the electronic product they had purchased, selection criteria for buying a particular product, main role player in purchasing the product, sources of information search, motives for selecting the product etc. The secondary data for the study was collected from different sources such as technical and trade journals, articles, newspapers, magazines, internet, periodicals, books, reports and publication of associations related to consumer durable industry. Statistical tools such as tables, percentages, Chi-square test were used for analyzing the data which helps in arriving at sound conclusions.

### **Analysis of Data**

Hypothesis 1: There is a significant impact of brand of a company on the consumer buying behavior in regard to specific electronics products.

**Company Brand:** Table 1 shows that the brand of the electronic product which was purchased by respondents recently. As postulated in first hypothesis H1, that there is a significant impact of brand of a company on the consumer buying behavior in regard to specific electronics product, the table (Table 1) shows that more than one fourth of the customers (27.50%) had purchased L.G. T.V. inspite of lot of brands available in the market. The purchase of Godrej refrigerator is highest (18.50%) followed by Videocon and LG company (both 17.50%). The washing machine market is captured by Videocon brand in selected area, the Udaipur city (36%).

Hypothesis 2: Consumers are always rationale in their buying motives and purchasing behavior and criteria like price of the product (economical aspect), technology used in product (technical aspect), brand name and recognition of company (goodwill and quality) effect their buying behavior and motives of purchasing electronic goods.

Table 1: Brand of electronic products

Sl. No.	Company Brand	Television		Refrigerator		Washing Machine	
		No.	%	No.	%	No.	%
1	LG	110	27.5	70	17.5	78	19.5
2	SAMSUNG	74	18.5	20	05.0	24	06.0
3	VIDEOCON	54	13.5	70	17.5	144	36.0
4	SANSUI	18	04.5	00	00.0	00	00.0
5	ONIDA	38	09.5	00	00.0	06	01.5
6	BPL	60	15.0	02	00.5	20	05.0
7	PHILIPS	14	03.5	02	00.5	00	00.0
8	SONY	10	02.5	00	00.0	00	00.0
9	PANASONIC	06	01.5	00	00.0	00	00.0
10	CROWN	06	01.5	00	00.0	00	00.0
11	AKAI	04	01.0	00	00.0	00	00.0
12	WHIRLPOOL	00	00.0	66	16.5	52	13.0
13	DAEWOO	02	00.5	02	00.5	00	00.0
14	ZENITH	00	00.0	02	00.5	00	00.0
15	KENWOOD	02	00.5	00	00.0	00	00.0
16	TCL	04	01.0	00	00.0	02	00.5
17	VOLTAS	00	00.0	06	01.5	00	00.0
18	KELVINATOR	00	00.0	46	11.5	02	00.5
19	GODREJ	00	00.0	74	18.5	02	00.5
20	ELCTROLUX	00	00.0	02	00.5	06	01.5
21	SHARP	02	00.5	00	00.0	00	00.0
22	WESTON	02	00.5	00	00.0	00	00.0
23	ALLWYN	00	00.0	24	06.0	00	00.0
24	MAHARAJA	00	00.0	00	00.0	04	01.0
	Total	400	100.0	400	100.0	400	100.0

**Selection Criteria for the Particular Company's Household Electronic Goods:** Table 2 shows the selection criteria for the particular company as has been hypothesized in second hypothesis H2 that influences buying behavior and buying motives of consumers. The above table indicates that the main selection criteria for purchasing television is technical aspects (32.50%) followed by brand name (30.50%) and quality (29.50%). The main criteria for selecting refrigerator is quality (36.50%) followed by technical considerations (29%) and brand name (23%). While selection criteria results for purchasing washing machine shows that 45% respondents view that technical aspects is the main selection criteria followed by brand (19.50%) and quality (19%). This fact is tested statistically by applying chi square test and result came out to be highly significant ( $\chi^2 = 89.522$ ,  $df = 8$ ,  $p < 0.001$ ). Thus, Hypothesis 2 is supported and chi square test's results are

confirming that consumers are always rationale in their buying motives and purchasing behavior and criteria like price of the product (economical aspect), technology used in product (technical aspect), brand name and recognition of company (goodwill and quality) effects their buying behavior and motives of purchasing electronic goods. Hence, it can be concluded that technical information, brand and quality of product are main selection criterion for purchasing electronic products.

Table 2: Selection criteria for the particular company's household electronic goods

Product	Selection Criteria										Total
	Technical		Economical		Services & Satisfaction		Brand		Quality		
	No.	%	No.	%	No.	%	No.	%	No.	%	
Television	65	32.5	8	4.0	7	3.5	61	30.5	59	29.5	20
Refrigerator	58	29.0	14	7.0	9	4.5	46	23.0	73	36.5	200
Washing Machine	90	45.0	6	3.0	27	13.5	39	19.5	38	19.0	200

Chi sqr = 89.522; df = 8; Results = Highly significant ( $p < 0.001$ )

Hypothesis 3: Source and medium of information is one of the major external factors that influence buyer behavior and buying motives for electronics products.

**Source of Information for purchasing Household Electronic Goods:** Table 3 shows the source of information for purchasing household electronic goods. This table (Table 3) indicates that the main source of information for the purchase of television is newspapers and magazines (32.25%) followed by television (27.50%) and friends and refrigerator as it was found that 37.25% purchasers use newspaper as the main source of information followed by television (33%) and friends & relatives (21.25%). And for the purchase of washing machine, the similar trend is observed as it was found that newspaper and magazines are the main source of information (37.50%) followed by television and friends and relatives (22.50%). Overall it can be said that the main sources of information for purchasing electronic products are newspaper & magazines, television and friends & relatives. This fact is further confirmed by applying test of association between source of information and electronic products. The chi-square test result is highly significant (Chi sqr = 45.85, df = 12,  $p < 0.001$ ) which shows type of electronic product and source of information are not independent. Hypothesis 3 postulated that source and medium of information is one of the major external factors that influence buyer behavior and buying motives for electronics products has been thus, confirmed by the results of chi square test.

Hypothesis 4: Each individual member of family (including spouse) plays a very influencing role in purchasing behavior of consumers of electronic goods.

Table 3: Source of information for purchasing household electronic goods

Product	Source of Information														Total
	T.V. and Magazines		News Paper Relatives		Friends &		Personal		Salesman		From Shop		None		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Television	55	27.5	64	32.0	48	24.0	6	3.0	10	5.0	8	4.0	9	4.5	200
Refrigerator	66	33.0	75	37.5	42	21.0	9	4.5	5	2.5	4	1.0	1	0.5	200
Washing machine	63	31.5	74	37.0	45	22.5	10	5.0	4	2.0	2	1.0	2	1.0	200

Chi sq = 45.85; df = 12; Results = highly significant (p < 0.001)

Table 4: Main role of individual in purchasing household electronic goods

Product	Main role of individual in purchasing household electronic goods														Total
	Husband		Children		Wife		Husband and wife together		Mother		Father		Neighbour/Relative		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Television	143	35.8	66	16.5	57	14.3	40	10.0	20	5.0	68	17.0	6	1.5	400
Refrigerator	97	24.3	34	8.5	126	31.5	43	10.8	50	12.5	48	12.0	2	0.5	400
Washing Machine	74	18.5	26	6.5	154	38.5	40	10.0	62	15.5	40	10.0	4	1.0	400

Chi sq = 120.712; df = 12; Results = highly significant (p < 0.001)

**Main role of decision maker in purchase of household electronic goods:**

Table 4 shows the main role of the individual who plays the main role in purchasing the household electronic goods. When it was asked to respondents about the person in the family who plays main role in purchasing a particular product, an interesting fact comes out in observation which shows that while purchasing television husbands play the main role in purchasing, whereas in purchasing refrigerator and washing machine wives play important role in purchasing that products. In Hypothesis 4, is suggested that each individual member of family especially spouse plays a very influencing role in purchasing behavior of consumers of electronic goods. Chi square test of association also shows significant association between type of product purchased and main role played by an individual in family.

Hypothesis 5: *Consumer motive (quality, goodwill, availability, services, advertisement, etc.) is the most influencing factor that influences the consumer buying behavior and consumption pattern of specific electronic product.*

**Motives of Purchasing Household Electronic Goods:** Hypothesis 5 further suggested Consumer motive (quality, goodwill, need, etc.) is the most influencing factor that influences the consumer buying behavior and consumption pattern of different electronic goods as shown in following table (Table 5). The above table indicates that quality (25.50%) is the main motive for purchasing the television followed by goodwill (22.50%) and need (23%). While for refrigerator purchase, the same trend is observed (Quality, 31%; Goodwill 21.75% and Need 21.75%). Whereas for the purchase of washing machine, the main motive of purchase is quality (28.25%) followed by need (27%) and Goodwill (24%). Overall it can be said that the main motive behind purchasing a particular electronic product is quality of goods followed by need of the goods and thereafter goodwill of the goods. Regarding other factors taken under study, customers give least weightage to guarantee, services, advertisement, entertainment and knowledge etc. Chi square test also shows that purchase of a particular product is not independent of some particular motive behind purchasing particular electronic good.

**Implication of the Findings**

The paper highlights that for selling household electronic goods, companies have to concentrate more on media of promotion of a specific product through newspaper, magazines and television to make the product popular and thus informs consumer about the qualities that differentiate their product from those available in market of that product. The study also shows that husband and wife plays the main role in purchasing the household electronic goods. The paper also comes up with the finding that in the purchase of household electronic goods, the main selection criteria is technical aspect in case of television and washing machine, followed by brand name and quality whereas in case of refrigerator the criteria becomes quality followed by technology used and brand of the product. The study also depicts that the main motive for purchasing a particular household electronic good is its quality, need and goodwill. Consumers do not make their decisions in a vacuum. Their purchases are highly influenced by cultural, social, personal and

Table 5: Motive behind purchase of household electronic goods

Product	Motive behind purchase of household electronic goods																	
	Goodwill		Need		Quality		Guarantee		Services		Advertise- ment		Entertainment and knowledge		Easily available		None	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Television	90	22.50	92	23.00	102	25.50	6	1.50	20	5.0	14	3.50	30	7.50	4	1.00	42	10.50
Refrigerator	87	21.75	87	21.75	124	31.00	5	1.25	15	3.8	12	3.00	24	6.00	10	2.50	36	9.0
Washing Machine	96	24.0	108	27.0	113	28.3	16	4.0	11	2.8	10	2.5	18	4.5	24	6.0	4	1.0

Chi sqr = 66.563; df = 16; Results = Highly significant (p < 0.001)

psychological factors which are non-controllable by the marketer but must be taken into consideration as well as the source, medium and reliability of medium of information. The study shows that consumers are open to new and different products from time to time. The need of the time is that consumers just want the product to be flexible and adaptable to their needs and preferences.

### **Conclusion**

The results derived from the study indicate that for selling household electronic goods, the companies have to concentrate on information media for popularizing their products. In this case the main criteria of selection of an electronic good are technical aspect followed by quality and brand name. Buying motives studied in this research are quality of product, need of the consumer and goodwill of the company. This study will also intimate the main influencer as well as the role of individual in family in buying decision process in regard to electronic products. The findings derived from the study will be helpful for consumer durable companies in deciding and implementing their sales strategy for the promotion of household electronic products. Thus, electronic goods producing companies in framing their marketing policies, must take into consideration, consumer behavior towards electronic goods, according to the changing needs and demands of the consumer thus satisfying their existing customer needs and gain potential customers for sustained development and thus acquires competitive advantage in the highly dynamic and ever changing highly competitive market of electronic goods durable.

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## **Awareness and Perceptions of Customers' about Mobile Banking**

KAMINI SHAH, SANDIP BHATT AND NIRMAL JAIN

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A customer survey is conducted for finding out the awareness and willingness to use the Mobile banking. The findings of the study reveal that the Mobile banking offers convenience of anytime anywhere (24x7) banking to the customers and banks can design their marketing strategies of Mobile banking by addressing various concerns of security, costs etc. for more acceptance of this innovative banking product. It has a very wide potential of going beyond checking just the status of bank account balance.

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### **Introduction**

Ever thought of paying the taxi fare using your mobile phone? Or Dining at your favorite restaurant and paying for the sumptuous meal by tapping a few buttons on your mobile? What if you can instantly transfer urgently-needed money to your relative in a far-flung village from a local store where cell phones are recharged? (The Economic Times, November 11, 2009, p.13). The banking sector has been revolutionized with the advent of many innovative channels in the recent years. The emergence of e-banking channels has changed the way banking is perceived by the customers. Banking sector has stepped into the wireless age. Mobile banking (m-banking) is the latest addition to the list and is all set to make banking more comfortable to the customers. It has been effectively used in various countries as a channel for providing banking products and services. It has gained popularity among service-providers and customers as it is cost-effective. On the other end, it allows customers to carry out banking operations irrespective of time and place and facilitates expansion of customer-base through increased geographical reach (Nagesh 2009). Today, there are 635.51 (The Economic Times, July 24, 2010, p. 4) million mobile phone users versus less than 200 million bank account holders, a great opportunity for tapping financial inclusion (The Economic times, November 11, 2009, New Age Banking). India, the second-largest wireless market in the world, next to China, where 36% of people have mobile phones, according to Celent. The Boston-based financial-research and -consulting firm also reports that 84% of Indian households were unbanked in 2005 and that mobile banking in India has grown 94% since 2002. That adds up to projection of India's mobile

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banking active user base reaching 25 million by 2012 (Kunur Patel 2009, p 10). The Reserve Bank of India has recently issued the revised guidelines for mobile banking operations in India. Almost all banks in India have already launched their mobile banking operations in India. A plethora of mobile banking services are offered by them.

Mobile Banking refers to provision and availment of banking- and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank and stock market transactions, to administer accounts and to access customised information.” Thus, Mobile banking is the usage of mobile phone as a platform for banking transactions. The high penetration of mobile phones in India is the biggest driver for mobile banking in India. The various modes available to Indian users for mobile banking are:

- **SMS:** SMS is the simplest form of mobile banking. It is largely used for information-based services. But, the biggest challenge in SMS based mobile banking is that, it is the least secure form of mobile banking.
- **Interactive Voice Response:** IVR allows a caller to select options from a voice menu and interact with the phone system. The IVR system would then take the necessary instructions from the consumer by recording the tones of the number selections that the consumer enters on the key pad, or through spoken commands, and creates an instruction that is given to the service provider/bank. The security in IVR systems is relatively high than SMS.
- **Wireless Internet Protocol:** WAP is the usage of Internet on mobile for mobile banking applications. It is similar to Internet banking. The consumer's handset needs to be WAP enabled. WAP banking is open to similar threats as Internet banking.

The simplest way to classify these services depending on the *originator of a service* session is the 'Push/Pull' nature. Second way to categorize the mobile banking services, by the *nature of the service*, gives us two kind of services – Transaction Based and Enquiry Based (Dave Mona, Mobile Banking).

Table 1: Push based and pull based mobile service

	Push Based	Pull Based
Transaction Based		<ul style="list-style-type: none"> <li>● Fund Transfer</li> <li>● Bill Payment</li> <li>● Other financial services like share trading</li> </ul>
Enquiry Based	<ul style="list-style-type: none"> <li>● Credit/Debit Alerts</li> <li>● Minimum Balance Alerts</li> <li>● Bill Payment Alerts</li> </ul>	<ul style="list-style-type: none"> <li>● Account Balance Enquiry</li> <li>● Account Statement Enquiry</li> <li>● Cheque Status Enquiry</li> <li>● Cheque Book Requests</li> <li>● Recent Transaction History</li> </ul>

### **Mobile Banking in India**

India is marching towards m-commerce - a world where you can make all payments by keying in instructions on your mobile phone. In India, however, there is a limitation on the availability of functions that can be deployed by banking customers. Most m-banking transactions today are 'information-based' — customers engage in m-banking services like balance enquiry, last three transactions, "alerts" for strange activities in bank accounts etc. (<http://www.worldjute.com/mbank.html#TOP>)

M-banking in India has evolved from its early avatar of being just an information provider for services such as checking bank balances and setting payment reminders to transaction-based functions like bill payments, remittances and booking tickets for movies and for travel. Mobile banking services are truly innovative, intangible and employing high technology. This can also be considered as a good opportunity for financial inclusion. M-banking provides a banking interface at low transaction costs.

M-banking is cheaper than ATM banking, and more likely to happen than Net banking. A bank source reports these costs per transaction: Rs. 150 at a branch, Rs. 30 at an ATM, Rs. 15 with phone banking, and Rs. 10 for Internet and m-banking (The Economic Times, Nov. 11, 2009, p. 13).

Union Bank of India, the first state-owned bank which introduced mobile-based banking services in the market, has so far added only 1,700 customers in mobile banking, SBI has so far received only 10,000 registrations for mobile banking, while ICICI Bank has 80 lakh customers registered so far for mobile banking while HDFC Bank has 40 lakh registered clients. Kotak Mahindra Bank has around 52,000 clients under the mobile banking fold (<http://economictimes.indiatimes.com> , May 2009).

### **Mobile banking v/s Online Banking**

The internet banking revolution has not been very successful in developing countries as users do not have pervasive access to internet enabled computers. Mobiles solve this problem and go beyond to enable a true "*Anytime Anywhere Banking*" experience. This means that a customer can pay his bills during his commute to work, transfer funds between accounts as he is waiting for a movie to start or check on his bank balances when he is having lunch. Mobile banking in India today is in its infancy (<http://www.financialexpress.com/printer/news/198522/>). While one almost always carries a mobile phone, one does not carry one's PC or laptop<sup>1</sup>. If you look at the overall context the number of cell phone users is four and a half times the total number of bank accounts in this country. So mobile banking is being looked at as an option for providing transfers across the length and breadth (<http://www.financialexpress.com/printer/news/198522/>).

### **Review of Literature**

ABA Bank Marketing (2007) reports on the results of an online survey entitled "Mobile Banking: The Consumer Viewpoint," conducted by Synergistics Research Corp. The survey showed that users of mobile phone banking view

fills service as a secondary or emergency banking method. Mobile phone banking availability could double by 2010. Banking Technology report (2009) focuses on a few registered user base of mobile phone banking in India as of 2009. It mentions some obstacles to opportunities to adopt mobile phone banking in the country, including the lack of infrastructure. Certain standards to make transactions secure were set by the Reserve Bank of India (RBI) in an effort to encourage mobile banking. According to the projection of the report, the penetration of mobile phone banking active user base is anticipated to increase from 0.2% to 2% by 2012 reports that the research firm Towergroup Inc. has predicted increase of mobile-banking use to 53 million in 2013 as compared to 10 million in 2009 which represents a compound annual growth rate of 51.8%.

The survey conducted by the firm Mercatus LLC found that young adults' use of mobile Internet banking services offered through cellular telephones tripled in 2008. Some small businesses willing to pay for mobile banking. The article cites a survey which reveals that small businesses are willing to pay for online and mobile phone banking services if they increase convenience of save time. Mobile-banking use becoming more mainstream cites a report which shows that mobile phone banking is moving into mainstream use and is changing the way consumers manage their finances. Investing in ATMs to Stay a Low Priority reports that investing in automated teller machine (ATM) networks is likely to remain a low priority for most bankers until at least 2011. Patel, Kunur (2009) discusses technological innovations in mobile and Internet banking. Aletha Ling (2008) states that. Mobile phone banking have the potential to extend financial services to a vast section of people who have never had access to formal financial services and the potential to change the way in which financial services are delivered to all. Hundal B S and Jain Abhay (2006) emphasizes that Mobile banking, a new challenge, emerged when banking institutions began to consolidate their e-commerce activities. The article articulates the stimulating and inhibiting attributes in the adoption of mobile phone banking services and outlines some managerial implications. Nair (2005) emphasizes on the positive impact of technology infusion in almost all areas of banking operations, especially in the retail and payment systems in the country.

### **Research Objectives**

The objectives of the study are,

1. To study the individual's willingness to use mobile banking.
2. To identify concerns for slow adoption of mobile banking services.
3. To study the change in the pattern of customers' interactions with banks due to emergence of mobile banking.

### **Sample Selection**

The primary data has been collected through a customer survey to examine the awareness and acceptance of various mobile banking services among the customers of banks in selected places of Gujarat. The questions for the

primary survey have been adapted from the past survey of *Rajnish Tiwari and Stephan Buse, The Mobile Commerce Prospects: A Strategic Analysis of Opportunities in the Banking Sector.*

Data is collected using a *purposive convenience sample* of customers from 13 different places of Gujarat using structured questionnaire. The customer survey was conducted between February 2010 to April 2010. A total of 1648 people in the age group of 18 to 65 years responded. Out of that 23 questionnaire were incomplete. Hence for the purpose of the analysis of data 1625 respondents is used.

### Data Analysis & Findings

The survey participants were asked about their personal attributes like age, sex, profession, income etc. so as to identify potential customers. The data is analyzed in a descriptive, multi-dimensional manner so as to illuminate various aspects of Mobile Banking.

Table 1: Personal attributes of a survey participants

1. Age (Years)	No	%
= 18 years	79	5
18-20 years	315	19
21-30 years	669	41
31-40 years	282	17
41-50 years	185	11
= 50 Years and above	95	6
2. Gender		
Male	1084	67
Female	541	33
3. Educational Qualification		
Undergraduates	326	20
Graduates	722	44
Post Graduate	452	28
Others	125	8
4. Income		
< Rs. 20,000	823	51
Rs 20,000 – Rs 30,000	411	25
Rs >30,000	391	24
5. Occupation		
Professional	251	15
Businessmen	329	20
Servicemen	416	26
Others	629	39

Contd...

*Contd...*

6. Place		
Anand	206	13
Ahmedabad	122	8
Vallabh Vidyanagar	116	7
Valsad	129	8
Rajkot	26	2
Surat	51	3
Godhra	24	1
Vadodara	646	40
Ankleshwar	103	6
Nadiad	104	6
Dakor	26	2
Gandhidham	23	1
Jamnagar	49	3
Total	1625	

Table 2: Respondents' knowledge of mobile Banking

Descriptive Variable	Percentage Response
1. Profile of respondents bank account	
Public sector banks	40
Private sector banks	28
Cooperative sector banks	23
Other banks	4
2. General awareness of mobile banking	
Yes	83
No	17
3. Awareness of bank offering mobile banking facility	
Yes	76
No	12
Do not know	12
4. Liking to use mobile banking facility	
Yes	75
No	25
5. Preference for banking transactions	
Online banking	44
Mobile banking	39
None	17
6. Utilization of mobile Financial services	
Yes	53
No	47

94% of the survey participants own a mobile phone and 83% stated that they are aware about mobile banking. 40% possess bank account in public sector banks while 28% people are having an account in private sector banks. 76% of them are aware about mobile banking services offering of their banks and 75% were willing to use mobile banking services. But when they were asked about whether they prefer online banking or mobile banking, 17% said that they prefer none of the option and they are comfortable with visiting their banks in person, 39% of them said they prefer to use mobile banking but surprisingly only 53% have already utilized at least once these services. It means majority of them i.e. 77% respondents are yet to utilize these services. This indicates the need for serious attempts by the banks to make their customers aware and encourage utilizing their mobile banking offerings. The interesting fact is, however, that altogether 83% (if we combine online and mobile banking) of the survey participants have shown their preference for electronic banking. Thus, e-banking seems to have been accepted well by Indian customers.

### Statistical Analysis

Statistical analysis using Pearson's Chi square test was carried out at 5 % significance level to check willingness to use Mobile Banking towards Gender, Education Qualification and Income of respondents. The following hypotheses were formulated to fulfill the research objective. The results of Chi square value obtained on analysis are tabulated below:

Table 3: Chi Square Value

Hypothesis	Chi Square Value	Remarks
<b>H<sub>0</sub></b> Gender and Willingness to use Mobile banking is independent.	$\chi^2 = 11.8016$ $_{1,0.05} = 3.84$	Thus, H <sub>0</sub> Hypothesis is rejected and it can be said that the Willingness to use Mobile banking service is dependent on Gender of the user.
<b>H<sub>1</sub></b> Gender and Willingness to use Mobile banking is not independent.	$> \div^2_{1,0.05}$	
<b>H<sub>0</sub></b> Qualification and willingness to use Mobile banking is independent.	$= 13.05$ $_{3,0.05} = 7.82$	Thus, H <sub>0</sub> Hypothesis is rejected and it can be said that the Willingness to use Mobile banking service is dependent on Qualification of the user.
<b>H<sub>1</sub></b> Qualification and willingness to use Mobile banking is not independent.	$> \div^2_{3,0.05}$	
<b>H<sub>0</sub></b> Income and willingness to use Mobile Banking is independent.	$= 9.93$ $_{2,0.05} = 5.99$	Thus, H <sub>0</sub> Hypothesis is rejected and it can be said that the Willingness to use Mobile banking service is dependent on Income of the user.
<b>H<sub>1</sub></b> Income and willingness to use Mobile Banking is not independent.	$> \div^2_{2,0.05}$	

### Customer Perceptions of Mobile Banking

1. **Advantages of Mobile Banking:** 47% of survey participants were of the opinion that ubiquity is the main advantage that mobile banking can offer them. Only 36% of them selected the fast reaction to market developments as an advantage.
2. **Disadvantages of Mobile Banking:** When the survey participants were asked to select the disadvantages of mobile banking, 42% of them considered security concerns as the major disadvantage followed by (28%) complicated usage of mobile devices
3. **Apprehensions about mobile banking** The above table 5 indicates 53% are not very sure about the security issues; it makes them uncomfortable with m-banking transactions. People generally, (42%) feel more peaceful with physical transactions. 27% people are not sure about ability of bank to maintain confidentiality. Some of the participants opined that it reduces personal contact with the bank, slow data transfer and temptation to spend more at times as the other disadvantages. *This shows that it requires heavy customer education campaign from banks.*
4. **Expectations of People to make it more attractive:** In fact, 32% of the survey participants considered higher speed of data transmission, followed by 27% of the people considered cheaper costs of utilization would be the most attractive feature of mobile banking. 21% said mobile devices with bigger display would still encourage people to use mobile banking services.
5. **Medium of Mobile Banking:** The mobile financial services can be offered through messaging-based, browser-based and client-based technologies. The SMS is the most (48%) preferred medium of mobile banking.
6. **Purpose of Using Mobile Banking:** While 52% of the participants use m-banking services for time saving followed by 26% and 22% respectively, are attracted by confidentiality and clarity of transactions using these services. Thus, click on your mobile keys, send an SMS and you have completed your banking transaction.
7. **Change of Banks Due to Mobile Services:** In order to measure the significance given to m-banking, people were asked whether they are ready to change their existing banks, in case it neither offered nor planned to offer mobile financial services. They were also asked in case other bank is offering such services cheaper than their present bank; they were ready to switch to other bank. 65% were ready to change on cost considerations while only 44% participants wanted to change in case of non-availability of mobile financial services.

Table 4: Customer perceptions of mobile banking

Descriptive variable	Percentage Response
1. Advantages of Mobile Banking	
Ubiquitous ('anywhere, anytime')....	47
Fast reaction to market development	36
Nothing	16
Others	1
2. Disadvantages of Mobile Banking	
Security concerns/ issues	42
Complicated/ uncomfortable usage of mobile devise	28
Too expensive	16
Nothing	14
3. Apprehensions about mobile banking	
Security Issues	53
Availability	15
Not sure about ability of bank to maintain confidentiality	27
Feel more peaceful with physical transactions	42
4. Expectations of People to make it more attractive	
Cheaper cost of utilization	27
Highest speed of data transmission	32
Better input devises	20
Mobile devices with bigger display	21
5. Medium of Mobile Banking	
SMS	48
Internet access via in-built, standard browser (as in Online Banking with PC)	31
Client software, installable on the mobile device (as in Home Banking with PC)	13
6. Purpose of Using Mobile Banking	
No preference	9
Clarity of transactions	22
Confidentiality	26
Time-savings	52

**8. Awareness and Use of Mobile Banking Services:** Table 5 clearly indicates mismatch between awareness and usage of mobile banking services. Though 59% of the respondents are aware of balance check services of m-banking, surprisingly only 9% are actually using it. This was followed by paying bills (only 25% are using against 52% awareness and checking), mini statement of transactions (25% are actually using against the awareness level of 49%), payment status (34% against 43%) so far as awareness and actual usage is concerned.

Table 5: Awareness and use of mobile banking services

Sl. No.	Mobile Banking Service	Not Aware (%)	Used (%)	Aware (%)
1.	Stop payment of Checks	17	40	43
2.	Check payment status	22	34	43
3.	Paying Bills	23	25	52
4.	FD / other enquiries	15	45	39
5.	Mini Statement / transactions	26	25	49
6.	Check – Book request	26	29	46
7.	Balance Check	32	9	59

**9. Utility of Mobile Banking Services (Customer Perspective):** The respondents were asked to evaluate the degree of utility they attach to selected mobile banking services. The participants are required to rate these services on a scale of 1 (very much willing) to 6 (not willing at all) keeping in mind perceived utility to them. The respondents are willing to remit money using mobile, 79% of the respondents shown their willingness if we put together scale of 1 to 3 i.e., very much willing, willing and rather willing. In comparison to that 77% were ready to make payments for utility bills using their mobile. Very few are unsure (scale of 4) about utility of various mobile banking services which means they know what they want from this banking product. Making fixed deposits (61%) were the least popular service.

**10. Mobile banking services received by customers:** Mobile financial applications have been considered as one of the favorite applications. Some services are of universal interest. If we put together scale of 1 to 3, 84% of the respondents shown their interests in balance inquiries and statement of accounts, 81% alert through SMS for transaction and balance. Transaction thresholds can be set so that the customer gets an SMS alert whenever a certain type of transaction is performed on his or her account or stock prices reaches a certain level. Such limits can be defined by the customer himself. 79% of them shown interest in alerts through SMS for stock price thresholds and enquiry of branch and ATM locations were preferred by 78%.

Table No. 6: Customer perception of utility and availability of mobile banking services.

Mobile Banking Service	Customers' Perception (% response)					
	Very much willing	More willing	Willing	Don't know	Not willing	Not willing at all
<b>A. Utility of Mobile Banking Services</b>						
Selling & Purchasing of Financial Instruments	22	21	20	16	8	8
Making fixed deposits	18	22	21	17	9	13
Access administration (e.g. ordering new PIN No.)	17	17	30	17	9	10
Making payments for Utility Bills	25	38	14	11	6	6
Money Transfer / Remittances	48	19	12	9	5	7
<b>B. Mobile banking services received by customers</b>						
Product Information, conditions and offers	28	21	19	14	7	11
Foreign exchange rates and interest rates information	27	25	19	14	6	8
Stock market/commodity prices enquires & reports	27	28	17	14	7	7
Status confirmation after execution of an order	30	29	17	11	6	7
Enquiry of branch & ATM locations	36	25	17	11	6	5
Alerts through SMS for stock price thresholds	35	26	18	11	5	5
Alerts through SMS for balance	43	25	13	10	4	4
Alerts through SMS for transaction	41	27	14	9	4	4
Balance inquiries and statements of account	46	25	13	8	5	4

The weighted averages of the above features were calculated as provided below in table 7. It can be seen that willingness to use most of the services offered through m-banking has a weighted average in between 2 and 3 on willingness scale which implies that most of the respondents are willing to use such services.

Table 7: Services offered by bank

Services offered by Bank	Weighted average on willingness scale
Money Transfer / remittances	2.26
Making payments for Utility Bills	2.55
Access administration (e.g. ordering new PIN no)	3.13
Making Fixed deposits	3.16
Selling & Purchase of Financial Instruments	3.05
Balance inquiries and statements of account	3.16
Alerts through SMS for transaction	2.1
Alerts through SMS for balance	2.18
Alerts through SMS for stock price thresholds	2.18
Enquiry of branch & ATM locations	2.41
Status confirmation after execution of an order	2.4
Stock market / commodity prices enquires & reports	2.52
Foreign exchange rates and interest rates information	2.66
Product information, conditions and offers	2.72

### **Recommendations**

- Though majority of the people are aware of and willing to use Mobile Banking, there is no significant number of actual users of mobile banking. If bank can address the security concerns of customers, it may have a positive effect on the usage of mobile banking. As per new RBI guidelines, banks are required to put in place an extra layer of security – One time user password (OTP) – for credit transactions over phone (including automated IVR services)
- As the number of mobile users is more than number of people having bank accounts, banks can focus on including more number of people (rural as well as urban) in the bank net through mobile banking.
- Anytime anywhere (24\*7) banking, cost, flexibility, convenience and of course the security concerns were the major points highlighted in the survey by customers.

### **Limitations of the Study**

1. The responses to questionnaire by the customers may be their personal views and hence do not always reflect the mobile banking practices used through out the country.
2. The survey questionnaires used in this study were essentially limited in scope. Though the survey technique is not without flaws, it has been generally accepted as a reasonable proxy given the time and personal constraints in banking industry.

## Conclusion

Mobile banking in India is in a budding stage, with the high penetration of mobile phones acting as a growth driver. The increasing adoption of mobile web-enabled devices such as smartphones across the world has created a “fertile environment” in which mobile banking can grow. TowerGroup also says the proliferation of mobile devices and smart phones indicate a growing mentality among consumers of being “networked,” something that is changing people’s daily lives, including finance. The use of mobile technologies is a win-win proposition for both the banks and the bank’s customers. The mobile phone is obviously a communication tool but it has enormous potential to aid other value added services especially financial services. In India, mobile banking is largely driven by SMS and other nascent data services. In Japan and Korea, mobile banking has taken the bank into the mobile phone. Consumers can use their phone like a bank account and transfer electronic cash out of their mobile to pay for transactions at subways, convenience stores and movie tickets. The ultimate aim is to replace the wallet with the mobile phone. India has a long way to reach that level of mobile banking; however it is an easier path to tread now as the security standards and the transaction protocols have been developed and tested.

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## **SEGMENT REPORTING (IFRS-14 AND AS-17) A STUDY OF COMMERCIAL BANKS IN KENYA AND INDIA**

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The present study is based on identification of annual reports of 26 Indian commercial banks as well as 25 Kenyan commercial banks and shows that segment reporting practices of these units have taken a new turn after the implementation of the standards (IAS-14/Indian AS-17 respectively). There is no difference between the disclosure practices of Indian commercial banks and Kenyan commercial banks though they are adopting different accounting standards. There is a need for convergence to IFRS so that global understanding in the banking sector world over may develop.

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### **Introduction**

Segment reporting is applicable to a diversified enterprise. A diversified company may be defined as a company which has diversified operations i.e. activity or operations in different industries and/or foreign operations and sales where those activities or operations are significant in terms of sales, revenue or losses generated or assets employed. Under segment reporting, companies/banks especially those which are multi-product and multi-location are required to disclose their segment-wise operations in their annual reports as well as in their quarterly reports.

As per IAS-14, this standard should be applied by enterprises whose equity or debt securities are publicly traded and by enterprises that are in the process of issuing equity or debt securities in public securities markets. Those entities whose securities are not publicly traded but choose to disclose segmental information voluntarily in financial statements that comply with the IFRS, should comply fully with the requirements of IAS. This standard should be applied in complete sets of published financial statements that comply with International Accounting Standards (IAS).

In India this standard comes to effect in respect of accounting periods commencing on or after 1.4.2001 and is mandatory in nature from that date in respect of the following:

- a) Enterprises whose equity or debt securities are listed on a recognized stock exchange in India and enterprises that are in the process of issuing equity or debt securities that will be listed on a recognized stock exchange

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in India as evidenced by the Board of Directors' resolution in this regard.

- b) All other commercial industrial and business reporting enterprises, whose turnover for the accounting period exceeds Rs. 50 crores.

The objective of this statement is to establish principles for reporting financial information by segment information about the different types of products, services and the different geographical areas in which it operates. Such segment information helps users of financial statements: (1) better understand the enterprise past performance, (2) better assess the risk and returns of the enterprise and (3) make more informed judgments about the enterprise as a whole. Therefore, presentation of segment information as an integral part of financial statements becomes more essential to provide useful information for economic decisions.

### Segment Reporting Under IAS-14 and AS-17

Table 1: Comparison of IFRS-14 and AS-17

Position As per IFRS/IAS-14	Position as per Indian AS-17
1. IAS-14 prescribes treatment of revenue, expenses, P/L, assets and liabilities in relation to associates & joint ventures in consolidated financial statement.	1. AS-17 is silent on the respect of treatment in the consolidated financial statements.
2. IAS-14 encourages reporting of vertically integrated activities as separate segments but does not mandate the disclosure.	2. AS-17 does not make any distinction between vertically integrated segment and other segments.
3. IAS-14 provides that a business segment can be treated as reportable segment only if, inter alia, majority of its revenue is earned from sales to external customers.	3. AS-17 does not contain any such stipulation.
4. Under IAS-14, if a reportable segment ceases to meet threshold requirements, than also it remains reportable for one year if the management judges the segment to be of continuing significance.	4. Under AS-17, this is mandatory irrespective of judgment of management.
5. Incase of change in identification of segments, IAS-14 requires restatement of prior period segment information. Incase it is not practicable; IAS-14 requires disclosure of data for both the old and new bases of segmentation.	5. AS-17 requires only disclosure of the nature of the change and the financial effect of the change, if reasonably determinable.

**Literature Review**

The idea of segment reporting came up in the early 1970s. In 1974 the Financial Accounting Standards Board (FASB) of USA issued SFAS 14; Financial reporting for segments of a business enterprise which was strongly encouraged by the financial analyst community. It was after this that the International Accounting Standards Committee (IASC) issued IAS-14; Reporting financial information by segment in 1981. Later it was revised in 1998 and became effective for periods beginning on or after July 1, 1998. Several countries around the globe due to convergence to IFRS have made the segment reporting mandatory. In India AS-17; Segment reporting was issued in 2001 whereby it applies to listed enterprises as well as unlisted enterprises with an annual turnover exceeding Rs. 50 crores.

Few studies have been conducted regarding segment reporting. Aravanan S. (2002) studied the reportable segment of five corporate as per AS-17. The findings of the study showed that the segment reporting is the right step in the right direction towards improving the quality of financial statements. The United Nations Conference on Trade and Development (UNCTD) (2006) on reviewing the practical implementation issues of IFRS in Kenya found out that many companies, both listed and non-listed which presented segmental information failed to comply fully with the requirements of IAS-14.

Neetu Prakash (2006) studied segment reporting by a survey of 36 of foreign banks operating in India. The study observed that segment reporting practices of these units have taken a new turn after the implementation of AS-17. Although the attempts made by the foreign banks are highly applicable, yet more efforts are required to make segment reporting more meaningful and purposeful since there is a significant difference in the segment reporting disclosure practices in the banking units. Shukla W. (2005) studied the segment reporting practices of 49 Indian companies as per AS-17 under different categories such as banks, chemicals, pharmaceuticals, textile, software etc. The findings of the study showed that almost all the units have disclosed by 72% of the units. An interesting finding was observed that only one unit of the sample company has disclosed details about the inter-segment transfer of goods.

Empirical studies subsequently seem to suggest that segment information do have some benefits especially to the financial analyst community. (Nobes and Parker, 2000; Baldwin, 1984; Nichols, Tunnell and Selpal, 1995; Emmanuel Gerrod and Frost, 1989), Schiff, Jonathan B, Schiff Allen I (2006) offer a glimpse into the managerial decision making process of three industrial companies. Jack W. Paul A. Largay (2005) concluded that despite more segment data being reported, the potential of the new management approach to benefit users significantly is compromised by uneven compliance among reporting companies. Complicity of external auditors in compliance shortcoming should concern all stakeholders in the financial reporting process.

### Objectives

The following are the objectives of this study:

- i) To examine the adoption of IAS-14 by commercial banks operating in Kenya and AS-17 by commercial banks operating in India.
- ii) To study the items of disclosure for primary segments and secondary segments.
- iii) To know whether the companies are disclosing the items required by the segment reporting.

### Hypothesis

The basic assumption in this study is that, since accounting standards have gone global, all the banks working in the globe have same segment disclosure practices. Following are the hypotheses of the study.

**H<sub>0</sub>** : There is no significant difference in segment disclosure practices among Kenyan bank and Indian commercial banks.

**H<sub>1</sub>** : There is significant difference in segment disclosure practices among Kenyan banks and Indian commercial banks.

### Database and Methodology

For the fulfillment of the above objectives, the annual reports for the year ending 2008-09 of 25 Kenyan commercial banks and 26 commercial banks operating in India were selected. The period of study and sample of study was selected on convenience basis in order to fulfill the objectives of this study. Twelve (12) indicators were selected, eight (8) for primary and four (4) for secondary segment on the basis of disclosure requirement by IAS-14.

The indicators for primary and secondary segment are;

X1= Primary reporting; business segment

X2= Segment revenue

X3= Segment results

X4= Carrying amount of segment assets

X5= Total amount of segment liabilities

X6= Cost incurred during the period to acquire segment assets

X7= Expense segment results for depreciation and amortization

X8= Non-cash expense

X9= Secondary reporting; geographical segment

X10= Revenue from external

X11= Segment assets by geographical location

X12= Segment liabilities.

**An analysis of primary segment:** It is observed from the financial statements of the 26 commercial banks operating in India that 23(88.5%) banks have given segment information in the annual reports (Table 2). These sample units have reported that they have segmented their business into more than one segment. The 2(7.7%) sample units which have not disclosed

description segment reporting have different reasons. For example; First Leasing Company of India Limited states that the bank operations comprise of only one segment, no separate reportable segment under As-17 segment issued by the Institute of Chartered Accountant of India. In case of commercial banks operating in Kenya, it has been observed that 24 (96%) out of 25 units have given segment information in the annual reports. These units have also reported that they have segmented their business into more than one segment except one unit (i.e. Bank of Africa) which has not disclosed any information regarding segment reporting, and even the reason for not having such disclosure of segment information is not mentioned in its financial statement. It is observed that all the banking units showing segment reporting have chosen business segment as their primary segment.

Table 2: Summary of indicators disclosed for primary segment by the sample units

S. No.	Indicators	India		Kenya	
		Number of companies	%	Number of companies	%
1.	Business segment	23	88.5	24	96.0
2.	Segment revenue	23	88.5	23	92.0
3.	Segment results	23	88.5	21	84.0
4.	Segment assets	23	88.5	24	96.0
5.	Segment liabilities	23	88.5	24	96.0
6.	Cost incurred to acquire	6	23.1	13	52.0
7.	Segment asset.	4	15.4	13	53.0
8.	Expense segment results for depreciation. Non-cash expense				

Source: computed from the published financial records of sample units

It's clear that 88.46% of Indian sample units have disclosed about their segment revenue, segment results, segment assets and segment liabilities. Cost incurred to acquire segment assets was reported by 6(23.08%) units while an expense segment result for depreciation was disclosed by 4(15.38%) units. However no company disclosed about non-cash expense. In the case of Kenyan sample units 24(96%) disclosed their business segment, segment assets and segment liabilities. 23(92%) disclosed about segment results while 13(52%) disclosed about expense segment results for depreciation and cost incurred to acquire segment assets respectively. No unit reported about non-cash expense.

The overall picture of disclosure of segment reporting practices of commercial banks operating in India and Kenya shows that; there are 26 Indian commercial banks covered for the study and 25 Kenyan commercial banks. In case of Indian units, ICICI Bank is rated higher in the study followed by Standard Chartered bank, HSBC bank, Citi bank, Allahabad bank and Indian Overseas bank for their segment reporting disclosure. In case of Kenyan

units, CFC bank Ltd and Standard Chartered bank are rated highest in the study followed by Credit bank as well as Barclays bank of Kenya, Commercial bank of Kenya and National bank of Kenya Ltd for their segment reporting disclosure.

**Analysis of secondary segment:** It is observed from the 26 Indian commercial banks that only 11(42.31%) banks have reported that they have secondary segment i.e. geographical segment. The eleven (11) units have disclosed regarding revenue as well as segment assets, while 10(38.46%) units have disclosed regarding segment assets. 2(7.00%) of the units have reported regarding segment liabilities under geographical segment. In the case of Kenyan commercial banks under study, out of the total 25 units under study, only 12(48%) have reported secondary reporting i.e. geographical segment, where as twelve (12) units have disclosed regarding segment assets. Only 4(10%) units disclosed regarding segment liabilities under geographical segment. In both cases most of the units did not disclose geographical segment due to following reasons as mentioned in their annual reports.

Table 3: Results

	Primary Segment							Secondary Segment					
Kenyan Commercial Banks	24	23	21	23	23	13	12	0	11	13	11	4	
Indian Commercial Banks	24	24	24	24	24	6	3	0	8	8	7	0	
Chi value	0	0.354	2	0.354	0.354	4.15	7.71	NA	0.764	2.05	1.38	4.34	
p value	1	0.55	0.15	0.55	0.55	0.04	0.005	NA	0.382	0.151	0.238	0.03	
	NS	NS	NS	NS	NS	S	S	NA	NS	NS	NS	S	

Source: calculated values of chi square from annexure I and II.

**Testing of Hypothesis:** The basis hypothesis of the study is that there is no significant difference in segment disclosure practices among Kenyan and Indian commercial banks. This is tested by a non-parametric test  $X^2$  (chi square). The observations from Table 3 above have been mentioned in annexure I and II whereby the hypothesis is tested. Table 3 shows the calculated values of  $x$  as well as the P values at 5% level of significance. The Table reveals that there is no significant difference that has been found in variables measured under study. It is submitted that there is enough statistical evidence to accept the null hypothesis.

### Major Findings

After the implementation of IAS-14 and Indian AS-17, segment reporting practices of commercial banks working in India as well as Kenya have increasingly taken a new turn, and are responding to the requirements of the standard. It's been found that majority i.e. 88.5% and 96% (Indian units and Kenyan units respectively) have disclosed about their business segment. Other indicators like segment revenue, segment results, segment assets,

segment liabilities etc. have been disclosed by the sample units. It has also been revealed that in both countries, the first five indicators of primary reporting i.e. have greater compliance with the standard than the last three indicators of primary reporting.

### Conclusion

There are significant differences in the segment disclosure requirement between IAS-14 and Indian AS-17. Convergence of IFRS which is taking place world over will be of great importance of this problem as India is converging to IFRS by 2011.

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Annexure I: Indian Commercial Banks

S.No	Name of Bank	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12
1.	IDBI Bank	v	v	v	v	v	X	X	X	X	X	X	X
2.	Standard Chartered Bank	v	v	v	v	v	X	X	X	X	X	X	X
3.	HSBC	v	v	v	v	v	X	X	X	X	X	X	X
4.	Citi Bank	v	v	v	v	v	v	X	X	X	X	X	X
5.	ICICI Bank	v	v	v	v	v	v	v	X	v	v	v	X
6.	Allahabad Bank	v	v	v	v	v	v	X	X	v	v	v	X
7.	Andra Bank	v	v	v	v	v	X	X	X	X	X	X	X
8.	Punjab National Bank	v	v	v	v	v	X	X	X	X	X	X	X
9.	Canara Bank	v	v	v	v	v	X	X	X	v	v	v	X
10.	City Bank	v	v	v	v	v	X	X	X	X	X	X	X
11.	Corporation Bank	v	v	v	v	v	X	X	X	X	X	X	X
12.	Dena Bank	v	v	v	v	v	X	X	X	X	X	X	X

Contd...

Contd...

13.	Development credit Bank ltd	v	v	v	v	v	v	X	X	X	X	X	X
14.	Export import Bank of India	X	X	X	X	X	X	X	X	X	X	X	X
15.	First leasing company of India	X	X	X	X	X	X	X	X	X	X	X	X
16.	Global trust bank ltd	v	v	v	v	v	X	X		v	v	v	X
17.	Bank of India	v	v	v	v	v	X	X	X	v	v	v	X
18.	Indian overseas bank	v	v	v	v	v	v	X	X	v	v	v	X
19.	IndusInd bank ltd	v	v	v	v	v	X	X	X	X	X	X	X
20.	National bank for agriculture and rural development	v	v	v	v	v	X	v	X	X	X	X	X
21.	Syndicate bank	v	v	v	v	v	X	X	X	X	X	X	X
22.	UCO bank	v	v	v	v	v	X	X	X	v	v	v	X
23.	Union bank of India	v	v	v	v	v	X	X	X	v	v	X	X
24.	United bank of India	v	v	v	v	v	X	X	X	X	X	X	X
25.	Abu Dhabi commercial bank	v	v	v	v	v	X	X	X	X	X	X	X
26.	China trust commercial bank	v	v	v	v	v	v	X	X	X	X	X	X

Annexure II: Kenyan Commercial Banks

S.No	Name of Bank	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12
1.	ABC Bank	v	v	v	v	v	X	X	X	X	X	X	X
2.	Bank of Africa	X	X	X	X	X	X	X	X	X	X	X	X
3.	Bank on Baroda	v	v	v	v	v	X	X	X	v	v	v	X
4.	Barclays Bank of Kenya	v	v	v	v	v	X	v	X	v	v	v	X
5.	CFC Bank ltd	v	v	v	v	v	v	v	X	v	v	v	v
6.	Cooperative Bank of Kenya ltd	v	v	v	v	v	X	X	X	X	X	X	X
7.	Diamond Trust Bank of Kenya ltd	v	v	X	v	v	v	v	X	X	X	X	X
8.	Equity Bank ltd	v	X	X	X	X	X	X	X	X	X	X	X
9.	Housing Finance Company ltd	v	v	v	v	v	v		X	X	X	X	X
10.	Kenya commercial Bank	v	v	v	v	v	X	X	X	v	v	v	v
11.	National Bank of Kenya ltd	v	v	v	v	v	v	v	X	X	v	v	X
12.	National Industrial Credit Bank ltd	v	v	v	v	v	v	v	X	X	v	X	X

Contd...

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 Contd...

13.	Standard Chartered Bank	v	v	v	v	v	v	v	X	v	v	v	v
14.	Delphis Bank	v	v	v	v	v	v	v	X	X	X	X	X
15.	Trans National Bank ltd	v	v	X	v	v	v	v	X	X	X	X	X
16.	Bank of India	v	v	v	v	v	v	X	X	v	v	v	X
17.	Dubai bank ltd Kenya	v	v	v	v	v		X	X	X	X	X	X
18.	Imperial bank ltd	v	v	v	v	v	X	X	X	v	v	v	X
19.	Family bank	v	v	v	v	v	X	X	X	v	v	v	X
20.	Fina bank	v	v	v	v	v	v	v	X	X	X	X	X
21.	Giro commercial bank	v	v	v	v	v	v	v	X	X	X	X	X
22.	Development bank of Kenya	v	v	v	v	v	X	X	X	v	v	v	X
23.	Oriental bank of Kenya	v	v	v	v	v	v	v	X	X	X	X	X
24.	ECO bank	v	v	v	v	v	X	X	X	v	v		v
25.	Credit bank	v	v	v	v	v	v	v	X	v	v	v	X

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## **Countdown to Convergence How Well Academicians are Prepared?**

AMARJEET K. MALHOTRA

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This paper begins with the premise that the success of IFRS in bringing about the Globally Standardized Effective Financial Reporting (GSEFR) depends on the strength of infrastructural support and application of the standards in a manner that meets the intent for which they were formulated. Hence, there is going to be a growing demand for IFRS-educated professionals to lead the transition. Thus, this paper attempts to address the major issue of measuring the extent of preparedness of academicians to cope up the intricacies and challenges in adopting IFRS in India.

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### **Introduction**

International Accounting Standards (IASs) were issued by the International Accounting Standard Committee (IASC) from 1973 to 2000. The International Accounting Standard Board (IASB) replaced the IASC in 2001. Since then, the IASB has amended some IASs and has proposed to amend others, has replaced some IASs with new International Financial Reporting Standards (IFRSs), and has adopted or proposed certain new IFRSs on topics for which there was no previous IAS. Through committees, both the IASC and the IASB also have issued Interpretations of standards, previously known as International Accounting Standards (IAS), are standards and interpretations adopted by the IASB adopted in April 2001, and renamed it IFRS.

Narrowly, IFRSs refers to the new numbered series of pronouncements that the IASB is issuing, as distinct from the International Accounting Standards (IASs) series issued by its predecessor. More broadly, IFRSs refers to the entire body of IASB pronouncements, including standards and interpretations approved by the IASB and IASs and SIC interpretations approved by the predecessor International Accounting Standards Committee. Accordingly,

International Financial Reporting Standards comprise:

- International Financial Reporting Standards (IFRS) - standards issued after 2001
- International Accounting Standards (IAS) - standards issued before 2001
- Interpretations originated from the International Financial Reporting Interpretations Committee (IFRIC) - issued after 2001

- Standing Interpretations Committee (SIC) - issued before 2001
- Framework for the Preparation and Presentation of Financial Statements

### **Literature Review**

In the recent years, the academic research on the IFRS has been increasingly focused on assessing the need, importance and challenges of convergence to IFRS. Ball (2005) showed concern about substantial differences among the countries' implementation of IFRS, which may have risk uniformity. The researcher also feels that simply having uniform standards may not produce the required impact of uniform financial reporting if the approach and objectives of accounting differ. Carmona and Trombetta (2008) evaluated the logic and implications of the principles-based system and suggested that the principles-based approach to the standards and its inner flexibility enables the application of IAS/IFRS to countries with diverse accounting traditions and varying institutional conditions. Furthermore, he said that "the principles-based approach involves major changes in the expertise held by accountants and, hence, in their educational background, training programs and in the organizational and business models of accounting firms". Hboxma (2008) pointed out that the most significant discrepancy between the two sets of standards in accounting treatment of business combination, provisions, financial instruments and business assets with reference to both net income and share holder's equity while the individual accounting differences in property, plant and equipment show a significant difference only on share holders' equity.

In the context of development of innovative financial products such as derivatives and hedge funds, the financial reporting standards must be high enough to anticipate potential crises relating to institutional governance and transparency aspects or to direct early distress signals so as to plug any loopholes (Chakraborty, 2009). The quality financial reporting standards would augment the creditability of the organization and help it to establish its supremacy in the capital market as well as in the market in which it operates. Quality Financial Reporting (QFR) as the revolution that would bind the relationship of investors and creditors with the corporate which comes up with its frequent, transparent, true information etc. Though implementing quality financial reporting is voluntary, the managers need to take the initiative in finding new ways in providing effective information which the markets are not getting through GAAP (Lingiseti Venu, 2009).

There is a flurry of studies on the challenges of convergence. A study (Garth Coppin, 2009) speaks about changes in the accounting standards due to changing business practices and how they affect the company's financial reporting mechanism. It is expected that globalization and impact of reforms will impact on harmonization and reporting, also the impact of International Accounting Standards (IAS) on Indian accounting and reporting [ Pradeep Kumar Singh, 2009]. With exponential growth in cross-border investment and trading, there is a pressing requirement for globally accepted accounting standards. IFRS would be the right choice for a single global standard, since it has been prepared after wide consultation (C. Padmavathi, 2009).

Accounting standards cannot override the provisions of law governing the preparation and presentation of financial statements and all companies have to comply with the provisions of the Act (Sandip Bhatt, 2009). Cross-border capital flows in today's liberalized economic conditions demand fairly high standards of accounting information in corporate financial reporting. Differences in GAAPs of two countries exist due to the prevalence of different accounting rules of measurement, different interpretations of similar rules and varying degrees of financial statements (Prodepta K. Samanta et al., 2009). Country-level adoption of IFRS could be both economically more efficient and make the accounting much more credible to outsiders who need to rely on it (Sangeeta Makhija et al., 2009). The idea of global harmonization of accounting standards stems from lack of comparability of financial statements across the country (Krishna, 2009). Further, there are sufficient empirical evidences that Indian companies, those wish to raise capital from abroad are making a beeline to publish accounts under US GAAP and lists the key differences between the US GAAP and the Indian standards (Pradeep, 2009).

Many mechanisms incorporated by the corporate governance legislation worldwide were present in India earlier. The approach of Indian accountants and auditors appears to be driven by the spirit rather than by professional attitude and/or a systematic approach (Vishnu Kanhere, 2009). With the spirit of fair play and interdependence, Indian accountants can equip themselves with newer tools and technologies and stand up to the best in the world.

### **The Problem**

India has begun integrating with global financial markets. When companies are crossing national boundaries, reporting financial statements under IFRS is necessary to facilitate cross-border transactions and make comparisons easier. As per the IASB, financial statements may not be described as complying with IFRSs unless they comply with all of the requirements of each applicable standard and each applicable interpretation. The understanding and implementation of IFRS is not easy, the transition will be a tough challenge for the country as it requires a shift in the academic approach, along with regulatory challenges. The major problem that companies are likely to face is a talent crunch since, even in the current scenario, there is a scarcity of qualified resources and the convergence will only exaggerate the problem. The most important factor is to provide appropriate training to accounting staff and to teach accounting to new students based upon IFRS. Thus, the major problem to cope up with convergence is the lack of preparedness among practicing accountants, academicians, finance managers and finance controllers. To cope up with this pressure, the only solution is to train the trainers and most importantly the academicians. That is why, this paper attempts to study the extent of preparedness of academicians to take this convergence smoothly and flawlessly.

### **Objectives**

Following are the objectives of the study:

- To find out the level of awareness about convergence of Indian GAAP to IFRS.
- To find out the extent of preparedness among concerned academicians to cope up with the intricacies of convergence of Indian GAAP to IFRS.

### **Research Methodology**

The present study is based on primary data, an exploratory in nature, was conducted in the National Capital Region (NCR). Thus, the scope of the study in terms of geographical area been confined largely to National Capital Region (NCR). The selection of the respondents was governed by the principles of proportionate stratified but purposive sampling, where faculty teachings in private institutions were the respondents. In terms of respondents the scope of the present study has been restricted to analyse the views of 52 respondents teaching finance, accounting and taxation papers only. The survey has been carried out for private academic institutes imparting education in accounting and finance for any degree program. Teacher's sample represent 14 lecturers (L), 12 senior lecturers (SL), 15 assistant professors (AP) and 11 professors (P) thus, bringing total respondents number to 52. The alphabets L, SL, AP and P as written in brackets for different designations have been used in tables' titles for the purpose of presentation of the survey data. A structured questionnaire containing 14 questions relating to various aspects of awareness of convergence of Indian GAAP to IFRS has been developed. Specific questions relating to the extent of preparedness among academicians have also been developed. As the extent of preparedness depends on various factors such as up-gradation of qualification in accounting standards, taking some certification courses, participation in conference/seminars/workshop, research undertaken, any subscription on IFRS, any purchase of book etc. are considered. Questionnaires were sent through emails and couriers and the data was analysed with the help of percentages. Though an attempt was made to use the Chi-square test of significance, but we could not do so as the expected values of many cells were falling below 5.

### **Analysis and Results**

Awareness about the concept of IFRS: To assess the understanding of the meaning of IFRS a direct question was raised with five options on all the elements of IFRS. According to 92 percent respondents IFRS stands for those standards issued after 2001 as shown in Table 1. About 62 percent respondents take standards issued before 2001 as IFRS. But, the interpretations issued after 2001 by International Financial Reporting Interpretations Committee (IFRIC) are considered as IFRS only by 23 percent of respondents. Whereas, the interpretations issued before 2001 by the Standing Interpretations Committee (SIC) are considered to be the part of IFRS only by 12 percent of respondents and a very same percentage of respondents take framework for the preparation and presentation of financial statements as the part of IFRS.

Table 1: Response for the concept of IFRS

Concept	Frequency	Percent*
IFRS—Standards issued after 2001	48	92.30
IFRS—Standards issued before 2001	32	61.54
Interpretations issued by IFRIC after 2001	12	23.07
Interpretations by SIC issued before 2001	06	11.54
Framework for the preparation and presentation of Financial Statements	06	11.54

Source: Survey Data

\*Total of the percent column is more than 100 because many respondents opted for more than one of the given choices.

Table 2: Designation-wise response for the concept of IFRS

Designation	Option 1		Option 2		Option 3		Option 4		Option 5	
	Fre- quency	%								
L	12 (86)	25.00	4 (27)	12.50	1 (7)	9.09	0 (0)	0.0	0 (0)	0.0
SL	11 (92)	22.91	7 (58)	21.17	1 (8)	8.09	0 (0)	0.00	0 (0)	0.00
AP	14 (93)	29.16	10 (67)	32.00	3 (20)	27.27	1 (7)	16.67	1 (7)	16.67
P	11 (100)	22.93	11 (100)	34.33	6 (55)	54.45	5 (45)	83.33	5 (45)	83.33
Total	48	100	32	100	12	100	6	100	6	100

Source: Survey Data

\*Figures in brackets under the frequency column show the percentage response for a particular option in that particular category of academicians.

Table 2 reveals that 100 percent academicians in professor category were aware that IFRS comprises standards issued by IASB after 2001 and standards issued before 2001. Whereas about 50% professors were aware those interpretations issued both by IFRIC and SIC and frameworks for preparation of financial statement are the part of IFRS. This table further reveals 93% of assistant professors were clear that the IFRS concept means standards issued after 2001 and 67% of them understand the standards issued before 2001 as the part of IFRS. Only 20% of assistant professors took interpretations originated by IFRIC issued after 2001 as the part of IFRS concept. Whereas, only 7% respondents of this category considered Interpretations of SIC and other framework as part of the IFRS concept. Though, 92% respondents in senior lecturers category were aware that IFRS

comprises standards issued after 2001 and 57% were aware that standards issued before 2001 are the part of IFRS, but not a single respondent in this category knows that Interpretations issued by SIC and other framework are the part of IFRS concept. So was the case in lecturer's category, where about 86% and 27% respondents were aware that IFRS include standards issued after and before 2001 respectively. But, only 7% lecturers were considering interpretations issued by IFRIC as IFRS and none of the them considers the interpretations of SIC and other framework as the part of IFRS concept. Out of 6 responses in total to options 5 and 6, there were 83% and 17% responses from professors and assistant professors category with no response at all from lecturers or senior lecturers. In other words, 48 and 32 respondents (out of 52) take IFRS as standards issued before and after 2001 and a very small percentage of academicians understand about the interpretations of SIC and IFRIC etc.

Table 3: Response for the implementation plan of IFRS

Concept	Frequency	Percent
IFRS are going to be enforced in three phases	50	96.15
Phase I (April 2011): for listed companies having net worth of Rs. 1,000 crores or more and for all public interest entities	44	84.62
Phase II (April 2013): for listed companies with a net worth of Rs. 500-1000 crores	14	26.92
Phase III (April 2014): for listed companies having a net worth of Rs. 500 crores or less than that	9	17.31

Source: Survey Data

\*Figures in brackets under the frequency column show the percentage response for a particular option in that particular category of academicians.

Table 4: Designation-wise response for implementation plan of IFRS

Designation	Option 1		Option 2		Option 3		Option 4	
	Fre- Fre-	% %	Fre- quency	% quency	Fre- quency	% quency	Fre- quency	%
L	12 (86)	26.68	9 (64)	22.50	2 (14)	14.28	1 (7)	11.11
SL	10 (83)	22.22	8 (67)	20.00	2 (14)	14.28	1 (7)	11.11
AP	13 (87)	28.88	13 (87)	32.50	4 (27)	28.58	1 (7)	11.11
P	10 (90)	22.22	10 (90)	25.00	6 (54)	42.86	6 (54)	66.67
Total	45	100	40	100	14	100	9	100

Source: Survey Data

\*Figures in brackets under the frequency column show the percentage response for a particular option in that particular category of academicians.

Table 5: Response on deviation of existing indian GAAPs from IFRS

Concept	Frequency	Percent
No Deviation	1	1.93
Some Deviation	48	92.30
Complete Deviation	3	5.77
Total	52	100

Source: Survey Data

**Awareness about Implementation Plan:** Table 3 reveals that though 96% respondents in total were aware that the IFRS are going to be implemented in three phases in India and about 87% were aware that the first phase of introducing IFRS is due in April 2011 for listed companies having net worth of Rs. 1000 crores or more and also for all public interest entities. But, a very small number of academicians were aware about the complete details of implementation plan of IFRS in India with only 27% and 17% response respectively for II and III phases.

Table 4 reveals designation-wise awareness about the implementation plan of IFRS. There were 87% academicians in total, who were aware that the IFRS are going to be implemented in three phases in India. But, 90% of the professors were aware of this fact, thus the percentage score of professor was little higher than the overall percentage of awareness of implementation plan. Moreover, there was not a much difference in the awareness level of total phases among other three category of finance/accounting/taxation faculty as the response to this option was 87%, 83% and 86% for assistant professors, senior lecturers and lecturers respectively. 77% of respondents were aware that the first phase of implementation of IFRS in India is due in April 2011. But, again the 90% respondents in professor category were aware about this stage with a clear descending order i.e. 87% for assistant professor, 67% for senior lecturers and 64% response from lecturers for this option. This establishes that though the number of phases in implementation plan was known to almost 90% of academicians, but there was a steep decline in the awareness percentage when it comes to a specific stage. This percentage further deteriorated for next two stages as only 54% of respondents in total were aware about the specific detail of II and III phases. Moreover only 14% senior lecturers and 7% lecturers were aware about the details of next two phases, whereas 54% of professors were aware about these two phases, thus indicating a clear difference in awareness level for different category of academicians.

**Awareness on the extent of Deviation of existing Indian GAAP with IFRS:** Table 5 reveals that 92% respondents in total believe that there is some kind of difference between existing Indian GAAP and IFRS. Only 2% respondents think that there is no difference between the two and about 6% respondents said that the both set of accounting standards are completely different. This question was not further analysed because of a very clear outcome that though a very big percentage of respondents were having an

idea that there is some deviation, but neither professors nor lecturers could list down clearly even a single specific difference between the Indian GAAP and IFRS.

Table 6: Designation-wise response for the general preparedness for IFRS

Designation	Option 1		Option 2		Option 3		Option 4	
	Yes	No	Yes	No	Yes	No	Yes	No
L	4 (29)	10 (71)	5 (36)	9 (64)	4 (29)	10 (71)	3 (21)	11 (79)
SL	2 (17)	10 (83)	2 (17)	10 (83)	3 (25)	9 (75)	1 (8)	11 (92)
AP	1 (7)	14 (93)	3 (20)	12 (80)	5 (33)	10 (67)	0 (0)	15 (100)
P	1 (9)	10 (91)	2 (18)	9 (82)	6 (55)	5 (45)	0 (0)	11 (100)
Total Frequency	8	44	12	40	18	34	4	48
Percent	15.38	84.62	23.07	76.93	34.61	65.39	7.69	92.31

Source: Survey Data

\*Figures in brackets under all the option columns show the percentage response for a particular option in that particular category of academicians.

Preparedness for Convergence from Indian GAAP to IFRS: Respondents were asked to answer 'yes' or 'no' for four parameters to assess the understanding of preparedness on different levels, which has been tabulated in Table 6. This table reveals that about 85% of academicians believe that they are not prepared to cope up with the convergence, though 100% of the respondents suggested for the need of training to academicians on IFRS. According to 76% of respondents even practicing accountants are not prepared to cope up with the convergence. About 65% respondents believe that financial controllers in the corporate sector are not prepared and remaining 35% believe that they are. The probable attribute for such understanding seems to be awareness on different training programmes carried in the corporate sector. About 92% of respondents are of the view that tax officials in the country are not prepared well to cope up with the convergence. This observation supports the belief in general public that the government departments lack initiations for adopting any change. This table also brings out an observation that according to the academic community the corporate sector is the most prepared sector to meet the challenge of convergence.

Table 7 reveals that 98% of respondents have not gone for any certified course or any training program in IFRS and only 1 professor has undertaken the certification course on IFRS and the same person has also undergone a training program as well on IFRS. Only 8 respondents (15%) have attended workshop/seminar/conference on IFRS and out of which 4 are professors, 2

Table 7: Designation-wise response for preparedness to cope up with the convergence

Designation	L		SL		AP		P		Total	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Certified course on IFRS	0	14	0	12	0	15	1	10	1 (2)	51 (98)
Training on IFRS	0	14	0	12	1	14	0	11	1 (2)	51 (98)
Attended workshop/conference/seminar on IFRS	1	13	1	11	2	13	4	7	8 (15)	44 (85)
Authored any paper on IFRS	0	14	2	10	3	12	2	9	7 (13)	45 (87)
Subscription of journal/e-journal etc.	2	12	2	10	3	12	2	9	9 (17)	43 (83)

Source: Survey Data

\*Figures in brackets under the total frequency column show the percentage response for all categories of academicians.

are assistant professors and 1 person each from senior lecturer and lecturer category. Whereas, 85% of the respondents did not attend any session at all on IFRS. Here, again the 50% of those 8 respondents who attended any of the sessions on IFRS were from professor's category only. Further, 87% of respondent academicians have not authored any paper/article on IFRS and only 13% have worked in this direction. Out of 7 respondents who contributed under this head, 2 were professors, 3 were assistant professors and 2 were senior lecturers. There were 17% respondents who have subscribed some journal/e-journal/book etc on IFRS and remaining 83% have not subscribed anything at all to prepare for convergence. As far as the contribution in writing is concerned the assistant professors have a little edge over professors' category, otherwise professors are involved more in attending conferences/seminars/workshops etc.

If we correlate all these parameters of preparedness with those suggestions given by respondents, there seems to be a big paradox, as 100% of respondents suggested for the need of organizing training sessions for them by their respective institutions, ICAI and Indian Government. But, only 13% have contributed any research paper/article etc. and only 17% have been subscribing any journal/e-journal/book etc. to update their knowledge on IFRS. This finding becomes more important in the light of another finding through this study, according to which 100% of the respondents agree that IFRS implementation in India will affect the existing course curriculum. This leads to the conclusion that though, 100% of the respondents are aware that IFRS implementation will affect the existing curriculum, 100% of them want their institutions and government should put in extra efforts for their

training on IFRS, but a very small percentage of academicians are putting in their efforts in terms of contributing in research in this area, attending various discussion forums on the subject and even acquiring support material like books, journal, e-journals etc for preparing themselves to cope up with this challenge of convergence.

### Conclusion

There was not a significant difference either in level of awareness or that of preparedness among four categories of academicians. Moreover, this was well accepted by all the respondents that the academic curriculum in accounting principles and standards need to be changed from the next year. However, hardly any effort has been put in by the academic community teaching accounting/finance/taxation to prepare for this challenge. A very high percentage of respondents were well aware about the need of the hour, but the corresponding level of preparations is very unsatisfactory leading to a conclusion that the academicians need to identify their expected role, which needed to be played by them to train their pupil for this challenge demanding them to prepare first so to discharge this responsibility gracefully and successfully.

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## **PERCEPTION OF MUTUAL FUND INVESTORS**

V.M. SELVA RAJ AND A. BALA MURUGAN

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An investment can be described as perfect if it satisfies all the needs of all investors. Therefore, the starting point in searching for the perfect investment would be to examine investor needs. If all those needs are met by the investment, then that investment can be termed the perfect investment. Most investors and advisors spend a great deal of time understanding the merits of thousands of investment available in India. This paper mainly deals with Profile, mutual fund scheme selection, Factors influencing towards mutual fund among the investors.

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### **Introduction**

Savings form an important part of the economy of any nation. With the savings invested in various options available to the people, the money acts as the driver for growth of the economy. Indian financial scene too presents a plethora of avenues to the investors. Though certainly not the best or deepest of markets in the world, it has reasonable options for an ordinary man to invest his savings.

### **Objectives**

The present study deals with following objectives:

- To analyse the Profile of MF Investors.
- To identify the Scheme Preference, Investment objectives among MF Investors.
- To analyse the perception of Investors towards MF Investment.
- To identify the factors influence the selection of MF schemes.

### **Methodology**

The present study is both quantitative and analytical in nature. Both primary and secondary data are used for the study. The study has been undertaken during the period of June 2010 to August 2010. To make the study more practical and original, primary data has been collected from individual investors who have invested their hard-earned money in MFs. The individual investors residing in Tirunelveli Town are taken for sample survey. For collecting primary data tailor made interview schedule has been used. After

making relevant modifications in the light of pre-testing, it is employed to collect the opinion of sample investors.

Since the population of MF investors in the study area is quite large and unmanageable, the researcher is forced to confine the sample size as 50. Convenient random sampling method is applied while collecting primary data. Utmost care has been taken to avoid indifferent investors. More care is taken to minimize the sampling errors. For analyzing primary data, collected percentage method, weighted mean, 5-Point scaling method and Ranking method are used. The interview of schedule and the tools of analysis are developed in such a way to support each other.

### **Review of literature**

Devakumar. V.K (1987) reveals that earlier to 1985, there were very few investors and they were knowledgeable. During the 1985 boom, thousands of new investors invaded the market. The new investors suffered heavy losses compared to the professionals. A good number of new investors have walked out of the stock market to safer areas like UTI Units, NSC, etc. There is a mild shift of investment preferences to mutual funds also. Shunmugham (2000) conducted a survey of 201 individual investors to study the information sourcing by investors, their perceptions of various investment strategy dimensions and the factors motivating share investment decisions and reports that among the various factors, psychological and sociological factors dominated the economic factors in share investment decisions. T.R. Rajeshwari and V.E. Ramamoorthy undertook a study with the main aim of measuring the level of awareness among the retail investors about the concept and functioning of mutual funds in Mumbai, Bangalore and Hyderabad. The study reveal that more and more small investors with a great appetite for wealth are entering in to the industry, expecting a dramatic change in their personal wealth and therefore it is essential to educate them on the risks involved in mutual funds investment.

### **Results and Analysis**

#### **Profile of the Respondents**

- 1. Age:** Age was considered as an important parameter in the study because the saving preference differs according to the age. So the sample respondents were classified according to their age. It could be observed from Table 1 that vast majority of the respondents are in the age group below 40 years and about 18% of the investors in the age group of 41-50. It indicates that middle-aged persons are very conscious in savings and investment.

Table 1: Profile of mutual fund investors

Characteristics	No. of Respondents	Percentage
1. Age		
Below 30	19	38
30-40	20	40
41-50	9	18
Above 50	2	4
2. Gender		
Male	40	80
Female	10	20
3. Academic Qualification		
Non-graduates	11	22
Graduates	39	78
4. Occupation		
Professional	5	10
Salary	35	70
Business	8	16
Retired	2	4
5. Annual Income		
1 lakh -2 lakh	12	24
2 lakh -3 lakh	27	54
Above 3 lakh	1	22
6. Annual Savings		
Less 10,000	26	52
10,000 - 20,000	17	34
20,000 - 30,000	5	10
Above 30,000	2	4

- 2. Gender:** In India, gender plays an important role in any decision of an individual. Coming to the investment it is generally believed that male dominates the women in taking investment decision of the household. Table 1 depicts the gender wise analysis respondents. It is observed from the table that 80% of the respondents were male and 20% of them were female. It clearly depicted that the mutual fund investment widely prevalent among men than that of women. It showed that female members were not tapped fully and they were not given right to take investment decision.
- 3. Academic Qualification:** The fund preference and the general perception with regard to mutual fund investment differ according the educational qualification. In general, the awareness about mutual fund will be high in the case of highly qualified people. Taking this view in to consideration the sample respondents have been classified according to their

educational qualification. The study reveals that 22% respondents are not Graduates. The study revealed that majority of the non-Graduates is business people. Majority of the sample respondents are Graduates (78%) indicates that there is a strong relationship between educational qualification and investment habit.

4. **Occupation:** A majority of the people surveyed were from the salaried (70%). The business class (16%) also includes those people who are self employed. The study observed 10% of the respondents are professionals and another 4% are retired persons.
5. **Annual Income:** The investment of an individual directly correlated with the income of the investors. High income people tend to save and invest more because their disposable income after meeting their fixed obligation is high. Further the investment preferences and investment objectives differ according to income level. Taking this into consideration, the respondents were classified according to their level of income and the data in this regard are depicted in Table 1. It is observed that the majority of the sample investor's fall in the income group of Rs 2 Lakhs to 3 Lakhs followed by Rs 1 Lakh to 3 Lakhs followed by above Rs 3 Lakhs. It also indicates the popularity of investment habit is low among income group of Rs 1 Lakh to 2 Lakhs.
6. **Annual Savings:** The disposable income of an individual is indirectly related with his/her personal fixed obligation and the amount of savings and investment are directly correlated with the disposable income of an individual. Keeping this view in to account the sample respondents are classified according to their annual savings and shown in Table 1. The study revealed that in the study area majority of the people were able to save only less than Rs. 10,000 as it was revealed by Table 1. The table further revealed that 34% of the respondents comes under the annual saving level of Rs 10,000 -20,000 another 10% were come the savings level of Rs 20,000 -30,000.

#### Choice of Mutual Fund Schemes

1. **Scheme Preference among Mutual Fund Investors:** Schemes can be classified as growth scheme, income scheme, or balanced scheme considering its investment objective. Such schemes may be open-ended or close-ended schemes. The scheme preference among the mutual fund schemes by the investors is generally based on investment objectives. Against this back drop, the investor respondents were asked to rank the preference of schemes and the data in this regard are depicted in Table 2. It could be observed from Table 2 that the growth fund is very popular among mutual fund investors as the respondents gave first rank. The respondents gave second preference for income fund and third preference for balanced fund.
2. **Investment Objective:** The objective of annual fund investors differs among investors. An attempt has been made in this study to evaluate the perception of the investors with regard to investment objectives. Towards this purpose, investors asked rank the investment objectives and the data in this regard are shown in Table 2. It could be observed

from the Table 2 that the investors look for Good Return first in MF products, followed by capital Appreciation, Tax Benefits, and Liquidity.

- 3. Information Sources:** It is be observed from the Table 2, the most influencing factor for scheme selection is the self decision of investors. The other sources influencing scheme selection in the order of importance are friend's suggestions, broker recommendations and advertisement.

Table 2: Choice of mutual fund schemes

Attributes	I W=4	II W=3	III W=2	IV W=1	Total	Total Score	WMV	Rank
1. Scheme preference among mutual fund investors								
Growth	26	11	13		50	113	18.8	1
Income	16	14	20		50	96	16	2
Balanced	10	23	17		50	93	15.5	3
2. Mutual fund investment objectives among present investors								
Liquidity	10	6	11	23	50	103	10.3	4
Tax Benefit	7	13	20	10	50	117	11.7	3
Good return	19	18	6	7	50	149	14.9	1
Capital Appreciation	14	13	13	10	50	131	13.1	2
3. Information sources influencing the scheme selection								
Friends Suggestion	13	10	13	14	50	122	12.2	2
Broker/Agent	9	15	11	15	50	118	11.8	3
Advertisement	4	16	13	17	50	107	10.7	4
Self Decision	24	9	13	4	50	153	15.3	1

Source: Primary Data

### Factors considered in selecting Mutual Fund scheme

To identify the factors that influence the investors fund/scheme selection, 23 variables were identified. The factors that could influence the investors in their selection of Mutual funds/Schemes was first grouped in to 3 major factors – Fund/Scheme qualities, fund sponsor qualities and the expected investor services. The ranks were ascertained by obtaining the weighted mean value of the responses. Then the 23 identified variables were classified under the appropriate groups. In the survey, the respondents were asked to rate the importance of the 23 specified variables on a 5 point scale ranging from Highly Important (5) to not at all Important (1).

- 1. Fund/Scheme Qualities on Scheme Selection:** The first set factors that could influence the investors in their selection of Mutual funds/schemes were grouped under the head “Fund/Scheme Qualities”. The factors that are included under this head are “Fund’s/Scheme’s Performance record, Fund’s/Schemes reputation or brand name, Scheme’s expense ratio, Scheme’s Portfolio for investments. Reputation of schemes, portfolio mangers, withdrawal facilities, Favorable rating

by a rating agency. Innovativeness of the scheme, products with tax benefits, Entry and Exit load. The ranks were ascertained by obtaining the weighted mean value of the responses.

The 10 fund related variables were analyzed for their importance. The analysis revealed that the investors consider the variables, Fund/schemes brand name, rating by a rating agency, Innovativeness of the Scheme, Products with tax benefits, Schemes portfolio constituents are the first five important factors in their selection of fund/scheme.

- 2. Fund Sponsors Qualities:** The second set factors that could influence the investors in their selection of Mutual funds/schemes were grouped under the head "Fund Sponsors Qualities". The factors that are included under this head are Reputation of a sponsoring firm; Sponsor offers a wide range of schemes with different investment objectives. Sponsor has a recognized brand name, Sponsor has a well developed Agency Net Work/Infrastructure, and Sponsor has an efficient research wing and Sponsor's expertise in managing money. The ranks were ascertained by obtaining the weighted mean value of the responses.

The 6 fund sponsor quality related variables were analyzed for their importance. The analysis revealed that the investor considers reputation of the sponsoring firm, brand name of sponsor, Sponsor offers a wide range of schemes with different investment objectives, sponsors expertise in managing money, sponsor has a well developed agency net work/Infrastructure are first five important variables in their fund sponsor quality.

Table 3: Factors considered in selecting mutual fund scheme

Factors	HI	IM	MI	LI	NI	Total	Total Score	WMV	Rank
	W=5	W=4	W=3	W=2	W=1				
<b>1. Influence of Scheme Qualities on Scheme Selection</b>									
a. Fund/Schemes Performance Record	10	5	4	10	21	50	123	8.2	9
b. Fund Schemes Brand Name	25	5	10	5	5	50	190	12.6	1
c. Scheme expense ratio	12	5	5	8	20	50	131	8.7	8
d. Scheme Portfolio Constituents	16	6	8	10	10	50	158	10.5	5
e. Reputation of Schemes Portfolio mangers	13	7	5	5	20	50	138	9.2	7
f. Withdrawal facilities	7	5	7	10	21	50	117	7.8	10
g. Rating by a Rating Agency	23	7	5	10	5	50	183	12.2	2
h. Innovativeness of the Scheme	20	6	10	4	10	50	172	11.5	3
i. Products with tax Benefits	18	8	8	6	10	50	168	11.2	4
j. Entry and Exit load	15	8	7	5	15	50	153	10.2	6

Contd...

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<b>2. Influence of Fund Sponsors Qualities</b>									
a. Reputation of the Sponsoring Firm	20	10	5	10	5	50	180	12	1
b. Sponsor offers a wide range of schemes with different investment objectives	15	9	11	5	10	50	164	10.9	3
c. Brand name of Sponsor	15	10	10	5	10	50	165	11	2
d. Sponsor has a well developed Agency Network/Infrastructure	10	12	12	7	9	50	157	10.4	5
e. Sponsor has an efficient research wing	5	10	17	11	7	50	145	9.6	6
f. Sponsors expertise in managing money	14	8	13	6	9	50	162	10.8	4
<b>3. Influence of Investment Services</b>									
a. Disclosure of investment, Objectives, method and periodicity of valuation in advertisement	7	5	11	10	17	50	125	8.3	7
b. Disclosure of method, Periodicity of schemes sales and repurchase in offer document	15	8	7	12	8	50	164	10.6	5
c. Announcement of NAV on every trading day	20	10	5	10	5	50	165	12.3	1
d. Disclosure of deviation of the investment from expected pattern	17	9	5	12	7	50	157	11.1	4
e. Disclosure of Schemes investment on every trading day	10	8	9	14	9	50	145	9.7	6
f. Mutual Fund investors grievance redressal machinery	18	9	7	11	5	50	174	11.6	2
g. Additional services like free									
h. Insurance, free credit card, tax benefits.etc.	18	8	6	12	5	50	169	11.2	3

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 Source: Primary Data

**HI** : Highly Important, **IM**:Important, **MI**: Moderately Important, **LI**: Less Important, **NI**: Not at all Important.

**3. Investment Services:** The third set factors that could influence the investors in their selection of Mutual funds/schemes were grouped under the head "Influence of Investment Services". The 7 investment service variables are analyzed for their performance. The analysis revealed that the investor considers the variables announcement of NAV on every trading day, mutual fund investor's grievance redressal machinery, Additional services like free insurance, free credit card, tax benefits etc, Disclosure of deviation of the investment from the expected pattern, Disclosure of method, periodicity of schemes sales and repurchase in offer documents are the first five important variables in their investment service variables.

### Overall Ranking of Factors influencing Mutual Fund Scheme

An attempt has also been made to find out the overall ranking of the factors influencing the Mutual Fund scheme. It could be observed from the table that the most important factors which influence the scheme selection are scheme qualities.

Table 4: Overall ranking of factors influencing mutual fund scheme

Attributes	I	II	III	Total	Total Score	WMV	Rank
	W=3	W=2	W=1				
Scheme qualities	22	12	16	50	106	17.7	1
Fund sponsor	18	17	15	50	103	17.2	2
Investor Service	10	20	19	50	91	15.2	3

### Findings of the Study

The study indicates that middle-aged persons (30-40) are very conscious in savings and investment. The study revealed that the MF investment widely prevalent among Men (80%) than that of Women (20%) in our study area. This may be due to the reason that men are economically stronger than women. The study reveals that 22% of the respondents are not Graduates and the study majority of the sample respondents are Graduates (78%) indicates that there is a strongly relationship between academic qualification. The study observed that majority of the people surveyed were from the salaried class (70%).

The study observed that the majority of the sample investor's fall in the income group of Rs 2 lakh- 3 Lakhs, followed by 1 lakh- 2 lakh, followed by above Rs 3 lakh. The study revealed that in the study area majority of the people were able to save only Rs10,000-20,000. The study revealed that the growth fund is very popular among mutual fund investors s the respondents gave first rank. The respondents gave second preference for income fund and third preference for balanced fund. The study observed that the investors look for Good Return first in MF products followed by capital Appreciation, Tax Benefits, and Liquidity.

### Conclusion

The study identified self decision as the most influencing factor for scheme. The other sources influencing scheme selection in the order of importance are friend's suggestions, broker recommendation and advertisement. The analysis revealed that the investor considers. Fund/Schemes brand name, rating by a rating agency, innovative of the scheme, products with tax benefits, Schemes portfolio constituents are the first five important factors in their selection of fund/scheme.

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## **Forecasting Indian Stock Market Volatility**

ANIL K. MITTAL, D.D. ARORA AND NITI GOYAL

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This article aims at comparing eight different models used in estimation of volatility ranging from simple historical methods to non linear methods of volatility estimation such as ARCH/GARCH and then comparing their volatility forecasting performance through various forecast evaluation techniques such as: Root mean squared error (RMSE), Mean Absolute Percentage error (MAPE), Mean Absolute Error (MAE) and Theils U (TU). The study employs data from Indian Stock Market using daily closing prices of S&P CNX Nifty. The results do not clearly point towards the superiority of any single model. EWMA method has been found to be superior of all since it has been consistently ranked as second by three evaluation measures out of all four. MA12 model has been found to be the next best volatility estimator followed by GARCH (1, 1).

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### **Introduction**

Forecasting volatility is an important & a challenging task which has gained the attention of academics and practitioners over the last two decades. Estimation & forecasting of volatility is important as volatility is a key parameter used in many financial applications from derivatives valuation to asset management and risk management. To price an option, we need to know the volatility of the underlying asset from now until the option expires. In fact, the market convention is to list option prices in terms of volatility units.

Volatility refers to the ups and downs in the stock prices. Volatility in the stock return is an integral part of stock market with the alternating bull and bear phases. Without volatility superior returns cannot be earned. However, too much volatility is considered to be symptom of an inefficient stock market as higher volatility is an indicator of higher risk.

Volatility of returns in financial markets can be a major stumbling block for attracting investment in small developing economies. It has an impact on business investment spending and economic growth through a number of channels. High liquidity & low level of volatility is taken to be a symptom of a developed market. Low volatility is preferred as it reduces unnecessary risk borne by investors & thus enables market traders to liquidate their assets without large price movements.

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Since the optimal decision of investors relies on variance of returns, it is important to model and forecast conditional variance. Now the question is how can volatility be estimated? Which method can be used to estimate volatility? Number of methods have been developed to estimate volatility and each model leads to different volatility estimate. However, which method is reliable; It is still unanswered.

One of the main purposes of modeling variance is forecasting, which is crucial in many areas of finance. Despite the burgeoning interest in and evaluation of volatility forecasts, a clear consensus on which volatility model/or distribution specification to use has not yet been reached. Therefore, the out-of-sample forecasting ability should be a natural model selection criterion for volatility models. There are traditional methods which do not take into account the typical features of time series such as volatility clustering, fat tails & time varying variance. Therefore, researchers were motivated to consider non linear alternate methods such as ARCH/GARCH to capture such phenomena.

The autoregressive conditional heteroskedastic (ARCH) model of Engle (1982) & the generalized ARCH (GARCH) model of Bollerslev (1986) are the most common nonlinear models used in the finance literature. These ARCH class models have been found to be useful in capturing certain nonlinear features of financial time series such as heavy-tailed distributions and clusters of outliers.

Using data from Indian Stock Market, this paper focuses on the finding the best out of the sample volatility forecasting measure out of 8 competing models used in our study. The models will be compared based on four forecast evaluation measures namely: Root Mean Squared Error, Theils U, Mean Absolute Error and Mean Absolute Percentage Error. The model which will give the least forecasting error will be ranked as first and the best estimator.

### **Review of Literature**

Lot of studies have been conducted to evaluate the out of the sample forecasting performance of different models. However, no unanimous decision could be reached by the results of different studies. Studies have been conducted on different countries & different forecasting horizons have been used. Most of the studies are related to developed markets. Very few studies have been made to forecast & evaluate the volatility forecasting performance of different models in emerging economies.

Akgiray (1989) used a GARCH (1, 1) model to investigate the time series properties of the stock returns and reported GARCH to be the best of several models in describing and forecasting stock market volatility. Randolph and Najand (1991) compares out-of sample forecasting power of the GARCH (1, 1) model and mean reversion models (MRM) for S&P 500 index futures and concludes that the MRM produce superior forecasts.

Hagen H.W., Bluhm & Jun Yu (2001), compared two basic approaches to forecast stock market volatility . First approach uses various univariate time series techniques such as historical mean model, EWMA, 4-ARCH type

models & stochastic volatility models, while the second make use of volatility implied in option prices. These models were evaluated using different forecast evaluation measures. The result did not clearly indicate which model is the best since the rankings are sensitive to error measurements & forecast horizon. However, when option pricing is the primary interest, the SV model & implied volatility should be used. On the other hand, ARCH Type models are useful when the objective is to calculate VAR. Trading strategy suggested the upper hand of implied volatility models for forecasting than time series models.

Holger Claessen; Stefan Mittnik (2002), examined the alternative strategies for predicting stock market volatility. In out-of-sample forecasting experiments implied-volatility information, derived from contemporaneously observed option prices or history-based volatility predictors such as GARCH models, are investigated to determine if they are more appropriate for predicting future return volatility. Employing German DAX-index return data it was found that past returns do not contain useful information beyond the volatility expectations already reflected in option prices. This supports the efficient market hypothesis for the DAX index options market.

Najand (2002) examined the relative ability of linear and nonlinear models to forecast daily S&P 500 futures index volatility. The study found that nonlinear GARCH models perform best using the RMSE and the MAPE criteria.

Yu Jun (2002) evaluated the performance of nine alternative models for forecasting price volatility using daily New Zealand data. The competing models contain both simple models such as the random walk and smoothing models and complex models such as ARCH-type models and a stochastic volatility model. Four different measures are used to evaluate the forecasting accuracy. The study reported the following: (1) the stochastic volatility model provides the best performance among all the models; (2) ARCH-type models can perform well or badly depending on the form chosen: the performance of the GARCH (3,2) model, the best model within the ARCH family, is sensitive to the choice of assessment measures; and (3) the regression and exponentially weighted moving average models do not perform well according to any assessment measure, in contrast to the results found in various markets.

Balaban Ercan, bayar Asli & W. Faff Robert (2003), evaluated the out-of-sample forecasting accuracy of eleven models in fourteen stock markets for the ten-year period 1988 to 1997 using random walk model, a historical mean model, MA models, weighted moving average models, EWMA models, an exponential smoothing model, a regression model, an ARCH model, a GARCH model, a GJR-GARCH model, and an EGARCH model. Four forecast evaluation measures have been used- mean error, the mean absolute error, the root mean squared error, and the mean absolute percentage error. The study found exponential smoothing model as superior and ARCH-based models as the worst forecasting models. The asymmetric loss functions were used to penalize under/over-prediction. When under-predictions are penalized more heavily ARCH-type models provide the best forecasts while

the random walk is worst. However, when over-predictions of volatility are penalized more heavily the exponential smoothing model performs best while the ARCH-type models were found to be inferior forecasters.

Chris Brooks & Gita Persaud (2003), explored a number of statistical models for predicting the daily volatility of several key UK financial time series. The out-of-sample forecasting performance of various linear and GARCH-type models of volatility are compared with forecasts derived from a multivariate approach. The forecasts were evaluated using traditional metrics such as mean squared error, and also by how adequately they perform in a modern risk management setting & found that the relative accuracies of the various methods were highly sensitive to the measure used to evaluate them.

Siakat Sovan deb, Srivyal Vuyyuri & Roy Bijan (2003), compared the out of the sample forecasting performance of eight different forecasting models using different symmetric & asymmetric loss functions. The result reported GARCH(1,1) model superior based on most symmetric loss function & ARCH (9) model has been found to be superior than other models for investors who are more concerned about under predictions than over predictions.

Balaban Ercan, Asli Bayar & Robert Faff (2004) evaluated the out-of-sample forecasting accuracy of eleven models for monthly volatility in fifteen stock markets for the ten-year period 1988 to 1997 using random walk model, historical mean model, moving average models, weighted moving average models, EWMA models, an exponential smoothing model, a regression model, an ARCH model, a GARCH model, a GJR-GARCH model, and an EGARCH model. Four forecast evaluation measures : the mean absolute error, the root mean squared error, and the mean absolute percentage error & found the exponential smoothing model provides superior forecasts of volatility & ARCH-based models generally prove to be the worst forecasting models. Asymmetric loss functions were also employed to penalize under/overprediction. When under-predictions are penalized more heavily ARCH-type models provide the best forecasts while the random walk is worst. However, when over-predictions of volatility are penalized more heavily the exponential smoothing model performs best while the ARCH-type models were found to be inferior forecasters.

Guida Tony and Matringe Olivier (2004) examined the forecasting performance of GARCH models for agricultural commodities data. Four indices had been used for analysis, the cocoa LIFFE continuous futures, the cocoa NYBOT continuous futures, the coffee NYBOT continuous futures and the CAC 40, the French major stock index. The study aimed to find out if the GARCH models are more fitted for stock indices than for agricultural commodities. The forecasts and the predictive power of the models have been evaluated using traditional methods such as the coefficient of determination in the regression of the true variance on the predicted one. The study reported that agricultural commodities time series could not be used with the same methodology as used for analyzing the financial series and no real "model leader" has been found in this sample of commodities.

Ricardo Pereira (2004), "Forecasting Portuguese Stock Market Volatility", attempted to forecast Portuguese Stock Market, using different measures of

volatility and comparing them through the use of both symmetric and asymmetric error statistics. He found smooth superiority of ARCH class models, principally when using RMSE and MME.

Madhusudan Karmakar (2005) estimated conditional volatility models in an effort to capture the salient features of stock market volatility in India and evaluate the models in terms of out-of the sample forecast accuracy. The paper also investigated for any leverage effect in Indian companies. The estimation of volatility is made at the macro level on two major market indices, namely, S&P CNX Nifty and BSE Sensex. The fitted model is then evaluated in terms of its forecasting accuracy on these two indices. In addition, 50 individual companies' share prices included in S&P CNX Nifty were used to examine the heteroskedastic behavior of the Indian stock market at the micro level.

Karmakar Madhusudan (2005), employed daily Indian data to examine the relative ability of various models to forecasts monthly stock market volatility. The forecasting models which were selected range from naive model to relatively complex GARCH model. The study did not report superiority of any one model under all measures used to assess the accuracy of the forecast, the overall results clearly identify the GARCH (1, 1) as the better model than the others.

S S S Kumar (2006) evaluated the ability of ten different statistical and econometric volatility forecasting models in the context of Indian stock and forex markets. He used both symmetric and asymmetric models to make on an out of the sample forecasts. The forecasting efficiency was evaluated on the basis of MAE, MAPE, RMSE and Theils U error statistics and a majority of evaluation measures reported that GARCH (4, 1) and EWMA methods will lead to better volatility forecasts in the Indian stock market and the GARCH (5, 1) will achieve the same in the forex market. The same models perform better on the basis of asymmetric error statistics also.

Zlatko J. Kovacic (2007), investigated the behavior of stock returns in Macedonian Stock Exchange focusing on the relationship between returns and conditional volatility. The conditional mean follows a GARCH-M model, while for the conditional variance one symmetric (GARCH) and four asymmetric GARCH types of models (EGARCH, GJR, TARCH and PGARCH) were tested. The forecasting performance of these models was tested under three error distributions. i.e. Gaussian, Student and Generalized Error Distribution. The results reported the following: (i) the Macedonian stock returns time series display stylized facts such as volatility clustering, high kurtosis, and low starting and slow-decaying autocorrelation function of squared returns; (ii) the asymmetric models show a little evidence on the existence of leverage effect; (iii) the estimated mean equation provide only a weak evidence on the existence of risk premium; (iv) the results are quite robust across different error distributions; and (v) GARCH models with non-Gaussian error distributions are superior to their counterparts estimated under normality in terms of their in-sample and out-of-sample forecasting accuracy.

Abdul Rashid, Shabbir Ahmad (2008), evaluated the relative performance of linear versus nonlinear methods to forecast Karachi stock index volatility using daily closing value of KSE-100 from January 2001 to November 2007. Simple methods to the relatively complex ARCH-class methods have been used for forecasting stock returns volatility. Regarding linear models, the exponential smoothing model ranks first utilizing the RMSE criterion. As regards nonlinear models for forecasting stock index volatility, GARCH-in-Mean model performs best as compared to EGARCH and PARCH models. Overall, we find that the GARCH-class models dominate linear models of stock price index volatility using the RMSE criterion.

Ramon L. Haydee (2008) in his study developed the statistical model to forecast the volatility feature of Philippine inflation from 1995 up to August 2007. The study employed the Autoregressive Moving Average (ARMA) model and then includes the *Seasonal* ARMA (SARMA) model to account for seasonality in the mean equation. The variance equation was formulated as the Generalized Autoregressive Conditional Heteroskedasticity process. Diagnostic tests and examination of forecast accuracy measures indicate that AR(1) and SMA(12) for the mean, GARCH(0,1) or ARCH(1) for the variance with Student's t distribution having fixed degrees of freedom  $\nu = 10$  for the errors, performs best in forecasting the volatility of the inflation rate for the Philippines. The out of sample forecasts for the mean and error variance of Philippine inflation from September 2007 to October 2007 have been achieved using dynamic forecasting.

Yalama Abdullah (2008), Yalama Abdullah & Guven Sevil (2008) attempted to forecast world's stock market volatility by employing seven different GARCH class models to forecast in-sample of daily stock market volatility in 10 different countries. The results of the study emphasized that the class of asymmetric volatility models perform better in forecasting stock market volatility than the historical models.

Marius Matei (2009) evaluated the main forecasting techniques with the motive to offer support for the rationale behind of the idea: GARCH is the most appropriate model to use when one has to evaluate the volatility of the returns of groups of stocks with large amounts (thousands) of observations. The appropriateness of the model was seen through a unidirectional perspective of the quality of volatility forecast provided by GARCH when compared to any other alternative model, without considering any cost component.

### **Research Methodology**

In this study we have used daily closing prices of S&P CNX NIFTY as a proxy for the Indian market since S&P CNX Nifty is a well diversified 50 stock index accounting for 22 sectors of the economy. It is the most popular index used for benchmarking the Indian Stock market. The data has been collected over a period of 9 years starting from 1<sup>st</sup> April 2001 to 31<sup>st</sup> March 2010. The data has been collected from the official website of NSE of India i.e. [www.nseindia.com](http://www.nseindia.com) and has been analyzed using Microsoft Excel and Eviews 5 software.

**Data and Preliminary Statistics:** The closing price series has been converted into continuously compounded returns by taking logarithmic differences by using the following formula:

$$r_t = \ln(p_t - p_{t-1})$$

Where  $r_t$  = continuously compounded logarithmic return

$p_t$  =daily closing value of index at day t and

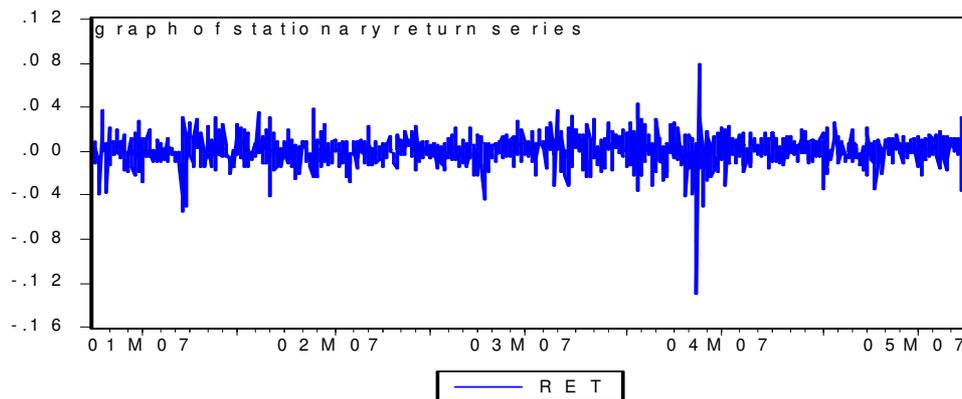
$p_{t-1}$  =closing value of index at day t-1

Thus, the closing value of the index is converted into continuously compounded daily logarithmic return series. The closing price series which was non stationary has been made stationary after the return series was calculated. The graphs of non stationary closing price series are reported in Figure 1 & for stationary series are reported in Figure 2 respectively.

Figure 1 Non stationary closing price series



Figure 2: Stationary closing price series



The descriptive statistics of the returns are as follows.

Figure 3: Descriptive statistics

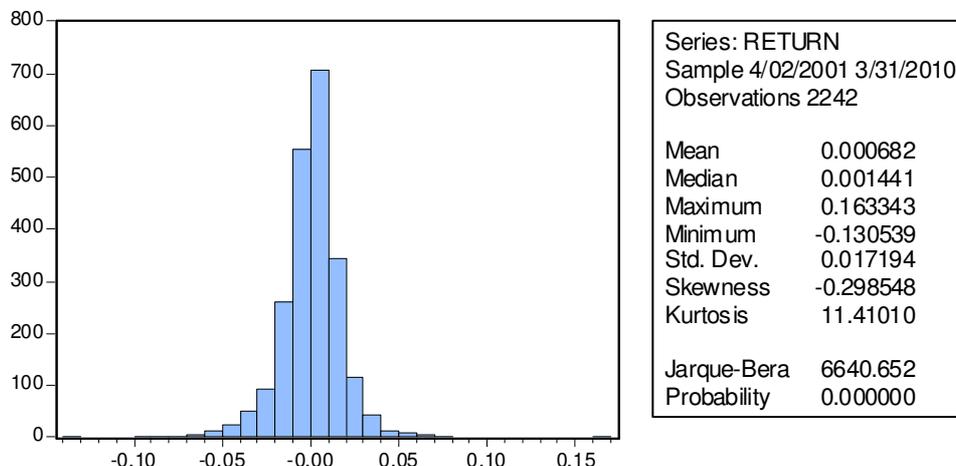


Figure 3 displays the descriptive statistics of the return series. It reveals that the mean return has grown over time with a standard deviation of 0.0171. The negative skewness indicates that the returns distribution of shares traded in the market has more tendency of earning a negative return. The kurtosis is greater than 3, showing that the data is not normally distributed and is fat tailed. The Jarque Bera also confirms for the non normality of data.

Monthly volatility has been calculated as follows. By summing up the squared daily returns for the number of trading days in that month. This gives volatility for that month. Since we have 9 years data, we get 108 monthly volatility values. Out of which half have been kept for out of the sample forecasting. i.e. closing index values from 1<sup>st</sup> April 2001 to 30<sup>th</sup> Sept, 2005 have been used for model application and from 1<sup>st</sup> Oct, 2005 to 31<sup>st</sup> March, 2010 have been used for out of the sample forecasting.

### Forecasting Techniques

There exist a wide range of potentially useful models for forecasting volatility. It is clearly impossible to employ all models in a single paper and challenging to convincingly justify the choice of a narrow set purely on objective grounds. The choice of models however is influenced by personal biases and practical implementation issues; it also importantly reflects our assessment of the models most widely used by practitioners. The following methods have been used for out of the sample forecasting:

- 1. Random Walk Model:** As per the random walk model, the best forecast for today's volatility is the last period's realized Volatility:

$$\text{So, } \sigma_t^2 = \sigma_{t-1}^2 \text{ where } t = 55 \dots 108$$

- 2. Historical Mean Model:** Assuming the conditional expectation of the volatility constant, this model forecasts volatility as the historical average of the past observed volatilities

$$\sigma_t^2 = \frac{1}{t-1} \sum_{i=1}^{t-1} \sigma_i^2 \quad \text{Where } t = 55 \dots 108$$

- 3. Moving Average Model:** In the historic mean model the forecast is based on all the available observations and each observation whether it is very old or immediate is given equal weight this may lead to stale prices affecting the forecasts. This is adjusted in a moving averages method which is a traditional time series technique in which the volatility is defined as the equally weighted average of realized volatilities in the past 'm' months. The choice of 'm' is arbitrary and in this paper we investigate three models MA 5, MA 12 and MA 30

$$\sigma_t^2 = \frac{1}{m} \sum_{i=1}^m \sigma_{t-i}^2 \quad \text{Where } t = 55 \dots 108$$

- 4. Simple Regression:** In this method first, an autoregressive series is formed for first part of data which is meant for estimating the parameters and the estimates thus obtained were used for forecasting the volatility for the next month. Thus, the first part involves running the following regression:

$$\sigma_t^2 = \alpha + \beta \sigma_{t-1}^2$$

' $\alpha$ ' and ' $\hat{\alpha}$ ' are estimated over the 4.5 year period from April 2001 till 31<sup>st</sup> Sept 2005. Now for the next forecast, the volatility for October 2005 the parameters ' $\alpha$ ' and ' $\hat{\alpha}$ ' are re-estimated by omitting the most distant past observation i.e April 2001 and including the Sept 2005 actual volatility observation. This process is repeated and thus the estimation window moves forward.

- 5. Exponential Weighted Moving Average:** This method is actually Exponential Smoothing method but some practitioners and in particular Risk metrics call it as EWMA. This method is considered better than the simple MA method as MA methods give same weight to all the observations but in this the more recent observations get more weight. Under this method, the forecasts are calculated as a weighted average of the immediate past observed volatility and the forecasted value for that same period. Formula used is as follows:

$$\sigma_t^2 = \alpha \sigma_{t-1}^2 + (1 - \alpha) \hat{\sigma}_{t-1}^2 \quad \text{Where } t = 55 \dots 108$$

Here  $\hat{\alpha}$  is known as smoothing factor and is constrained to  $0 < \hat{\alpha} < 1$ . The smoothing factor determines the weight that is given to actual volatility observed in the immediate past. In this we have used  $\alpha = 0$  initially and to give more weight to the recent observations, every time the value of  $\alpha$  is increased by 0.01.

- 6. ARCH and GARCH:** ARCH stands for autoregressive conditionally heteroskedasticity and these models are a sophisticated group of time

series models initially introduced by Engle (1982) and ARCH models capture the volatility clustering phenomenon usually observed in financial time series data. In the linear ARCH (q) model variance is modeled as a constant plus a distributed lag on the squared residual terms from earlier periods. These models consist of two equations: a mean equation and variance equation.

Mean equation is modeled as a constant plus an error term.

$$r_t = c + \varepsilon_t$$

Variance equation is given by:

$$\sigma_t^2 = \omega + \sum_{i=1}^q \alpha_i \varepsilon_{t-i}^2$$

Where  $\varepsilon_t \sim iid N(0, 1)$  For stability  $\sum \alpha_i < 1$  and theoretically q may assume any number but generally it is determined based on some information criteria like AIC or BIC. In financial markets the ARCH(1) model is most often used. Accordingly the conditional variance is modeled as:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2$$

The problem with the ARCH models is that it involves estimation of a large number of parameters and if some of the parameters become negative they lead to difficulties in forecasting. Bollerslev (1986) proposed a Generalized ARCH or GARCH (p, q) model where volatility at time t depends on its own lagged values plus lagged values of error terms. The advantage of GARCH formulation is that though recent innovations enter the model it involves only estimation of a few parameters & hence there will be little chance that they will ill-behaved. In GARCH there will be two equations – conditional mean & conditional variance equation.

Conditional mean equation is given below:

$$r_t = c + \varepsilon_t$$

Conditional variance equation shown below,

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

The parameters in both the equations are estimated simultaneously using maximum likelihood methods once a distribution for the innovations  $\varepsilon_t$  has been specified generally it is assumed that they are Gaussian. The simplest and most commonly used member of the GARCH family is the GARCH (1, 1) model shown below:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2$$

GARCH forecast for the next day is computed given as:

$$\sigma_{t+1}^2 = \omega + \alpha \varepsilon_t^2 + \beta \sigma_t^2$$

If the forecast is required for more than one day for instance 'n th' day forecast is given as

$$\sigma_{t+n}^2 = \omega \sum_{i=0}^{n-1} (\alpha + \beta)^i + (\alpha + \beta)^n \sigma_t^2$$

so the monthly volatility can be generated by summing up each one day ahead volatility forecasted for the total of (n) trading days in that month. Following Schwarz Information Criteria and Akaike Information Criteria we found that the best model in the GARCH (p, q) class is GARCH (1, 1) model for estimating volatility in the Indian market.

In our forecasting exercise first we estimated the GARCH parameters using the estimation period i.e., April 1<sup>st</sup> 2000 to Sept. 30<sup>th</sup> 2005 and then used these parameters to obtain the forecasts for the trading days in Oct 2005 and these daily forecasts were aggregated to obtain the forecast for the month of October 2005. Then again for the month of November the ' $\hat{\alpha}$  &  $\hat{\beta}$ ' parameters were re-estimated using data from April 1<sup>st</sup> 2000 to Oct. 30<sup>th</sup> 2005. The procedure is repeated for every month till we get all the out of the sample volatility estimates.

### Empirical Results

We have already discussed eight alternative models of volatility forecasting. From each model we got 54 out of the sample monthly volatility forecasts. We now need now to compare the true and forecasted values.

We compare the forecast performance of each model using the four traditional error statistics which are: Mean absolute error (MAE), Root Mean Square Error (RMSE), Theil's U (TU) and Mean Absolute Percentage Error (MAPE). These are defined as follows:

- 1) RMSE = 
$$\sqrt{\frac{1}{n} \sum_{i=1}^n (\sigma_i^{\wedge 2} - \sigma_i^2)^2}$$
- 2) Theil's U = 
$$\frac{\sum_{i=1}^n (\sigma_i^{\wedge 2} - \sigma_i^2)^2}{\sum_{i=1}^n (\sigma_{i-1}^2 - \sigma_i^2)^2}$$
- 3) MAPE = 
$$\frac{1}{n} \sum_{i=1}^n |(\sigma_i^{\wedge 2} - \sigma_i^2) / \sigma_i^2|$$
- 4) MAE = 
$$\frac{1}{n} \sum_{i=1}^n |\sigma_i^{\wedge 2} - \sigma_i^2|$$

Table 1 below presents the actual and relative forecast error statistics for each model across the four error measures. It reveals that no single model is clearly superior. Theils u statistic ranks MA12 model as best. It ranks EWMA as second followed by MA 30 and GARCH(1, 1) mode 1

MAE method ranks GARCH (1, 1) as best and EWMA as second and MA 12 as the third. The third statistic i.e RMSE ranks MA12 as first. It ranks EWMA as second best model followed by MA 30 as third best. It did not favor GARCH (1, 1). This model got 6th rank as per this statistic.

As per the last statistic i.e. MAPE, regression is the best volatility forecasting measure followed by GARCH(1, 1) and historical mean model. Unlike other measures, this measure has not given a good rank to EWMA model.

Table 1: Forecast evaluation error statistics

TU	Rank	MAE Rank	RMSE Rank	MAPE Rank	Rank			
Historical mean	0.87429	5	0.00576	4	0.01413	7	0.86391	3
MA 5	4.05782	8	0.01691	8	0.02172	8	2.69304	8
MA 12	0.64356	1	0.00575	3	0.00865	1	1.18053	6
MA 30	0.76120	3	0.00596	5	0.00941	3	1.22061	7
Regression	0.91569	6	0.00580	6	0.01032	4	0.72511	1
Garch (1, 1)	0.791	4	0.00558	1	0.01340	6	0.75047	2
Random Walk	1	7	0.00675	7	0.01078	5	0.93852	5
Exponential smoothing	0.75095	2	0.00561	2	0.00935	2	0.89756	4

Evaluating the above results, we can say that no method has been clearly ranked as best by all the measures taken together. EWMA method has been consistently ranked as second by all the three measures except the fourth measure i.e. MAPE. It has ranked it at 4<sup>th</sup> place out of the 8 models considered. MA12 method has been ranked as second best after the EWMA method but its ranking is not consistent over the error statistics used. However, MA 5 method has been consistently ranked as the poorest volatility forecasting model by all the measures considered. Our results for GARCH (1, 1) are also favourable. If we see the ranking on an average, it can be termed as third best volatility forecasting model. MAE method rates it as first and MAPE as second. Had we considered just MAE & MAPE methods, we could have ranked GARCH(1, 1) as best. Thus, results depend on the models under consideration and the forecast evaluation measures to evaluate these models. Regression method has also not been favored much by our results. However, the MAPE statistic has given it the topmost ranking. Random walk model has also not been found to be good.

## Conclusion

The study was a further attempt to answer the question which is the best volatility forecasting model. We considered eight volatility forecasting models

which were compared for their forecast evaluation efficiencies using four traditional error statistics namely: RMSE, MAE, MAPE; Theils U. The study reports EWMA to be the best model with consistent individual ranking by different evaluation measures and most of the earlier studies even favor it as a superior volatility forecasting model. After that it ranks MA12 as the best followed by GARCH (1, 1) model. The MA 5 model has been found to be the worst. However, the results of the study are affected by the models used for study, forecast evaluation measures used and the data horizon being evaluated.

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## **Study of Strategic Financial Management and Growth in Micro and Small Scale Enterprises in Chhattisgarh**

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This Paper assessed the role of strategic financial policies among formal and informal credit institutions in determining the access of Micro and Small-scale enterprises to credit in Chattishgarh. The analysis of the Research show that the limited use of credit reflects lack of supply, resulting from the rationing behaviour of both formal and informal financial institutions. The Research concludes by improving lending terms and conditions in favour of small-scale enterprises would provide an important avenue for facilitating their access to credit and growth.

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### **Introduction**

The provision of credit has increasingly been regarded as an important tool for raising the incomes of rural populations, mainly by mobilizing resources to more productive uses. As development takes place, one question that arises is the extent to which credit can be offered to the rural poor to facilitate their taking advantage of the developing entrepreneurial activities. The generation of self-employment in non-farm activities requires investment in working capital. However, at low levels of income, the accumulation of such capital may be difficult. Under such circumstances, loans, by increasing family income, can help the poor to accumulate their own capital and invest in employment-generating activities.

Commercial banks and other formal institutions fail to cater for the credit needs of smallholders, however, mainly due to their lending terms and conditions. It is generally the rules and regulations of the formal financial institutions that have created the myth that the poor are not bankable, and since they can't afford the required collateral, they are not considered creditworthy. Hence despite efforts to overcome the widespread lack of financial services, especially among smallholders in India, and the expansion of credit in the rural areas in the states of India, the majority still have only limited access to bank services to support their private initiatives. In the recent past, there has been an increased tendency to fund credit programmes in India aimed at small-scale enterprises. In Chattishgarh , despite emphasis on increasing the availability of credit to small and micro

enterprises (SMEs), access to credit by such enterprises remains one of the major constraints they face. A survey of small and micro enterprises found that up to 32.7% of the entrepreneurs surveyed mentioned lack of capital as their principal problem, while only about 10% had ever received credit.

Although causality cannot be inferred a priori from the relationship between credit and enterprise growth, it is an indicator of the importance of credit in enterprise development. The failure of specialized financial institutions to meet the credit needs of such enterprises has underlined the importance of a needs-oriented financial system for rural development. Experience from informal finance shows that the rural poor, especially women, often have greater access to formal credit facilities than to formal sources. The same case has also been reported by surveys of credit markets in Chattishgarh.

Small-scale enterprises have become an important contributor to the Chattishgarh economy. The sector contributes to the creating of employment opportunities, training entrepreneurs, generating income and providing a source of livelihood for the majority of low-income households. With about 70% of such enterprises located in rural areas, the sector has a high potential for contributing to rural development. Yet the majority of entrepreneurs in this sector are considered uncreditworthy by most formal credit institutions. Whereas a small number of NGOs finance an increasing number of micro enterprise activities, most formal institutions still deny these enterprises access to their services.

Improving the availability of credit facilities to this sector is one of the incentives that have been proposed for stimulating its growth and the realization of its potential contribution to the economy. Despite this emphasis, the effects of existing institutional problems, especially the lending terms and conditions on access to credit facilities, have not been addressed. In addition, there is no empirical study indicating the potential role of improved lending policies by both formal and informal credit institutions in alleviating problems of access to credit. Knowledge in this area, especially a quantitative analysis of the effects of lending policies on the choice of credit sources by entrepreneurs, is lacking for the rural financial markets of Chattishgarh.

Although informal credit institutions have proved relatively successful in meeting the credit needs of small enterprises in some countries, their limited resources restrict the extent to which they can effectively and sustainably satisfy the credit needs of these entrepreneurs. This is because as micro enterprises expand in size, the characteristics of loans they require become increasingly difficult for informal credit sources to satisfy, yet they still remain too small for the formal lenders. Studies on financial markets in Chattishgarh have shown that credit markets are segmented and unable to satisfy the existing demand for credit in rural areas. Whereas for informal markets it is the limited resources that bring the constraint, for the formal sector it is the difficulty in loan administration that is the problem. A relevant issue for empirical investigation is therefore that of the factors behind the coexistence of formal and informal credit sources in the Chattishgarh market.

**Review of Literature**

An increasing body of analytical work has attempted to explain the functioning of credit markets using new theoretical developments. Challenging the paradigm of competitive equilibrium, they have explored the implications of incomplete markets and imperfect information for the functioning of credit markets in developing countries. These provide a new theoretical foundation for policy intervention. Most of this body of literature has followed from the pioneering work of Stiglitz and Weiss (1981). The work by Stiglitz and Weiss (1981) marks the beginning of attempts at explanations of credit rationing in credit markets. In this explanation, interest rates charged by a credit institution are seen as having a dual role of sorting potential borrowers (leading to adverse selection), and affecting the actions of borrowers (leading to the incentive effect). Interest rates thus affect the nature of the transaction and do not necessarily clear the market. Both effects are seen as a result of the imperfect information inherent in credit markets. Adverse selection occurs because lenders would like to identify the borrowers most likely to repay their loans since the banks' expected returns depend on the probability of repayment. In an attempt to identify borrowers with high probability of repayment, banks are likely to use the interest rates that an individual is willing to pay as a screening device. However, borrowers willing to pay high interest rates may on average be worse risks; thus as the interest rate increases, the riskiness of those who borrow also increases, reducing the bank's profitability. The incentive effect occurs because as the interest rate and other terms of the contract change, the behaviour of borrowers is likely to change since it affects the returns on their projects. Stiglitz and Weiss (1981) further show that higher interest rates induce firms to undertake projects with lower probability of success but higher payoffs when they succeed (leading to the problem of moral hazard). Besley (1994) analyses the rationale for interventions in rural credit markets in the presence of market failure. Since credit markets are characterized by imperfect information, and high costs of contract enforcement, an efficiency measure as exists in a perfectly competitive market will not be an accurate measure against which to define market failure. These problems lead to credit rationing in credit markets, adverse selection and moral hazard. Adverse selection arises because in the absence of perfect information about the borrower, an increase in interest rates encourages borrowers with the most risky projects, and hence least likely to repay, to borrow, while those with the least risky projects cease to borrow. Interest rates will thus play the allocative role of equating demand and supply for loanable funds, and will also affect the average quality of lenders' loan portfolios. Lenders will fix the interest rates at a lower level and ration access to credit. Imperfect information is therefore important in explaining the existence of credit rationing in rural credit markets. Moral hazard occurs basically because projects have identical mean returns but different degrees of risk, and lenders are unable to discern the borrowers' actions (Stiglitz and Weiss, 1981; Besley, 1994). An increase in interest rates negatively affects the borrowers by reducing their incentive to take actions conducive to loan repayment. This will lead to the possibility of credit rationing. Bell (1990) demonstrates that

incomplete information or imperfect contract enforcement generates the possibility of loan default and eventually problems of credit rationing. The result is loan supply and implicit credit demand functions, both of which are simultaneously determined. The role of risk in allocation of credit through its effect on transaction costs, therefore, becomes important in incomplete credit markets. Accordingly, where default risk exists, with an upward sloping supply curve, lenders offer borrowers only a choice of points on the supply curve, and borrowers are restricted to these points. It is impossible to identify the loan demand schedule using the observed loan amounts since these only reflect the existing supply. The credit demand function can only be interpreted from the borrower's participation decision, i.e., the decision to borrow or not, and from which sector to borrow. Such a decision will depend on, among other things, the borrower's economic endowment and opportunities. The credit demand schedule identification problem therefore implies the existence of credit rationing (see also Elhiraika and Ahmed, 1998). Empirically, research on the use of credit by rural households tends to imply that although it is not obvious that demand for credit far outweighs the supply, there are significant obstacles to the transformation of potential demand into revealed demand (Aryeetey, 1996b). The absence of supply creates a lack of demand expressed in low revealed demand. Again, due to market failure in the credit market, the transaction cost involved in obtaining credit is considered greater than the utility, prompting households to switch profits between activities as a way of financing working capital. This also explains the existence of informal credit markets alongside formal credit institutions.

### **Objectives**

The objectives of the Research were:

- To identify the main features of the lending policies of formal and informal credit Institutions that determine the access to and use of credit by small-scale entrepreneurs.
- To analyse the factors that determine the participation of entrepreneurs in credit markets and their choice of credit sources in Chattishgarh.
- To draw policy implications for financial services to small-scale enterprises in Chattishgarh.

### **Hypothesis**

The Research tested by below hypothesis:

*The differences in the lending terms and conditions between formal and informal credit institutions significantly determine the access to and the choice of credit sources by small-scale enterprises in rural Chattishgarh.*

### **Financial Structure in MSME Sector: Chattishgarh**

A large part of financial transactions in Chattishgarh occur outside the formal financial system. Literature on the theory of credit markets with incomplete markets and imperfect information is largely relevant to the functioning of informal markets. Informal finance has been defined to refer

to all transactions, loans and deposits occurring outside the regulation of a central monetary authority, while the semiformal sector has the characteristics of both formal and informal sectors. In Chattishgarh it has been defined as the operations of savings and credit organisations, professional moneylenders, and part-time moneylenders like traders, grain millers, smallholder farmers, employers, relative and friends, as well as cooperative societies. Three types of informal units in Chattishgarh have been identified: savings mobilization units with little or no lending; lending units that do not engage in any savings; and those units that combine deposit mobilization and lending. Institutions that combine both are relatively new, however; they respond to the need for direct financial intermediation and mostly fall under self-help organizations. The types of informal financial units vary mainly because they are purpose oriented and mostly developed to meet the demand for specific financial services, responding to the demands of a distinct clientele, defined by themselves using various socioeconomic criteria. However, while informal financial units develop their market niches and have different reasons for selecting a particular segment of the market, they tend to have similar fundamental practices in the administration of credit, which allows for a uniform analysis. As these goals change, informal financial units change their operational structures. Studies on informal finance in Chattishgarh show that they will do well so long as the level of economic activity demands increasing financial services for groups that cannot be reached by the formal financial institutions. The emergence of demand for short-term credit especially among traders and farmers will most likely lead to the development of an informal unit to meet that demand. Informal credit therefore seems to develop in response to an existing demand. Some social scientists have further observed that while credit from an individual lender to a set of borrowers may vary in terms of what package each borrower receives, the more significant variation in the informal credit market is in terms of what packages different lenders are able to offer in the market. They therefore note that differences in the loan characteristics represent different lender types. The failure of many government-subsidized credit programmes to reach the targeted groups has prompted the emergence of alternative means of administering rural credit so as to reduce the access problem. Informal credit markets have developed in rural areas, providing faster services to their clients. Often the degree of flexibility and creativity in informal finance accounts for the high degree of success in such institutions. The types of services they provide mostly contrast with those offered by traditional credit programmes. These are characterized mainly by short-term and small loans, increasing discipline in terms of savings, judgement of borrower creditworthiness, and information about the borrower. Service is based on flexible arrangements to adjust to changing economic circumstances, and reducing the transaction costs to the borrowers who respond by maintaining discipline in order to sustain their access to credit. The result is a dependable working relationship between the lender and the borrowers. Most services of informal finance are client oriented, thus reducing the transaction costs for customers, and making their services attractive despite the explicitly high interest rates. Informal lenders are also able to

design their contracts to meet the individual dimensions, requirements and tastes of the borrowers. This contrasts with the formal lender practices, which charge relatively low interest rates, but often impose procedures on borrowers that substantially increase their transaction costs. In the informal financial markets, loans and deposits are often tied, enabling individuals to increase their access to credit by improving their deposit performance. This allows participants to enhance their creditworthiness through their savings and repayment record. All these lessons emphasize the fact that financial intermediaries at the small-scale level must be prepared to offer the financial services demanded by clients if microfinance is to succeed.

### **Research Methodology**

The Research used mainly primary data from individual entrepreneurs and farmers receiving credit from both formal and informal credit institutions as well as those who did not. The formal financial institutions considered in this study were commercial banks, Post Office Savings Bank, non-bank financial institutions, savings and credit cooperative societies, and development financial institution, mainly. Informal finance has been used to refer to all transactions, loans and deposits occurring outside the regulation of a central monetary or financial market authority. The informal financial institutions in this study consisted of rotating savings and credit associations, savings and credit associations, mutual assistance groups, relatives and friends, welfare associations, shopkeepers, traders, and community-based organizations and NGOs. The primary data were collected by administering structured questionnaires to the sampled respondents.

The survey was carried out in the rural areas of five districts of Bastar, Dhamtari, Rajnandgaon, Mahasamund and Kanker. Small-scale entrepreneurs engaged in farming, wholesale and retail trade, and primary processing of agricultural products were selected as the units of study. Rural-based enterprises were selected mainly because surveys on micro enterprises in Chattishgarh have shown that More than 50% of the enterprises are located in rural areas. The same study also shows that the sector is dominated by commerce and trade activities mostly in agricultural products. Up to 61% of the enterprises are involved in trade. These results have been confirmed by the of NSSO survey, which shows that 66% of the enterprises are in the rural areas. Further, up to 64% of all credit to micro and small-scale enterprises have gone to those enterprises located in rural areas.

### **Design of Sampling**

A population of small-scale enterprises in agricultural and non-agricultural activities was identified in the Chattishgarh, with the help of the Volunteers. This included both credit and noncredit users. Since there is no official data of individual entrepreneurs operating in these markets, it was not possible to have a listing of the traders. Respondents were therefore randomly selected from this population in the selected markets using a random start. Systematic random sampling was then used to pick subsequent respondents. The entrepreneurs were also used to identify the available informal sources

of credit from which they had benefited. This was necessary in order to avoid the problem of sample selection bias and also the possibility of informal lenders not known in the formal system. A sample size of 540 respondents was initially targeted. However, only 334 respondents were successfully interviewed, distributed as follows: Bastar 158 , Dhamtari 68, Rajnandgaon 48, Mahasamund 30 and Kanker 30.

### Estimation

The major characteristics of enterprises that are likely to determine their participation in credit markets, and which segments of the market they use. Such characteristics include: main occupation, household size, number of business owners and employees, gender of the owner, business revenues, income, enterprise age, and assets owned. Different people choose to use the available sources of credit depending on how they suit their personal and economic characteristics. These characteristics have been found to determine the decision to apply for credit at all, and whether to apply from either formal or informal lenders. However, their effects on the lenders' decision to ration applicants differ between the two market segments. Table 1 gives the distribution of the main occupation of the respondents.

Table 1: Distribution of occupation

Occupation	No. of respondents engaged in activity	Percentage
Selling forest produce	71	21.3
Selling fruits and vegetables	108	32.3
Selling other agricultural goods	23	6.9
Selling non-agricultural goods	118	35.3
Farming	8	2.4
Formal employment	6	1.8
Total	334	100

Source: Computed from the collected data

We observe that more than half of the respondents were involved in selling agricultural commodities. Another one-third was involved in selling non-agricultural products. Almost half of the sample (47%) had no supplementary activity on top of their main occupation. These results indicate that most of the enterprises sampled were small traders mainly in agricultural commodities as opposed to those engaged in non-agricultural enterprises. The composition of this sector in Chattishgarh can help to explain this observation. Surveys of small and micro enterprises in Chattishgarh have shown that more than 50% of the enterprises are located in rural areas. Their activities are also dominated by commerce and trade, most of which are in retailing and vending of agricultural products. These surveys also found that up to 61% of the enterprises are involved in trade, with only 12% in services and 27% in manufacturing. This study therefore gives a representative picture of microenterprise response to credit needs, and their

use of various credit sources in the state. This is particularly so since the sample was drawn from major market centres in rural areas of selected districts. As a rural-based survey, the composition of the sample is therefore neither unexpected nor unrepresentative.

Table 2: Statistics for selected characteristic

Characteristic	Mean in (Rupees)	Mode
Approximate gross weekly income	15,000 (Rupees)	1900 (Rupees)
Approximate gross monthly income	60,000 (Rupees)	10,000 (Rupees)
Distance to the nearest credit source in kms	5	1
Household size	6	5
Number of enterprise owners	1	1
Age of the enterprise	8	2
Proportion of respondents who save part of their income (%)	74	
Proportion of the income saved (%)	29	10

Source: Computed

From Table 2, we see that most businesses had a weekly income of Rs 1900/-, and a monthly income of Rs 10,000/-. The average weekly and monthly incomes, however, were Rs 15,000 and Rs 60,000/-, respectively. The disparity between the mean and the mode in both cases indicates the high variation in income within the sample. The average age of the enterprises was found to be eight years, while the most common age was two years. Most of the enterprises had single owners.

The availability of credit, or access to credit by borrowers, can be explained in terms of the credit rationing behaviour of lending institutions. According to Zeller (1994), when borrowing credit is perceived as a decision making process, then it starts with the decision of the individual to apply for credit or not. This depends on whether the individual has a demand for credit. In this sample, the 164 (49%) respondents who had borrowed can therefore be classified as having had a demand for credit. However, among those who never used credit, there are those who did not apply because they did not need credit, and those who did not apply because they did not perceive any chance of getting credit. Those who did not apply because of lack of need for credit can be classified as not credit constrained, while those who did not apply because of other reasons are considered as credit constrained. In this sample, 15% of the respondents did not apply because they had no need for credit and are therefore classified as not constrained. The remaining 36% are credit constrained. Among the 49% who had used credit, there are also those whose loan applications were rationed and they did not get the total amount applied for. A comparison of means between the amount applied for and amount received showed that the amount applied for is significantly higher than the amount received from both formal and informal sources. This suggests the existence of loan quantity rationing in both the formal

and informal segments of the credit market. The differences between the amount applied for and amount received in both markets was tested for statistical significance. The results are presented in Table 3. The extent of credit rationing in the three segments of the informal market was also tested.

Table 3: Segments of the market

Market type	Mean amount Applied (Rs)	Mean amount Received (Rs)	t value	significance
Formal	51,961	29,018	2.77	0.008
Family and friends	10,461	8,870	1.53	0.140
Group based	2,284	1,703	1.85	0.072
Commercial lenders	23,012	11,252	2.04	0.046

Source: computed from the collected data

The results show that the difference between the amount applied for and that received is statistically significant in both credit markets, suggesting the existence of credit rationing in both markets. However, in the informal market, the difference between amount applied for and amount received is only statistically significant among the group based lenders and the commercial lenders. Among family and friends, the differences are not statistically significant, suggesting less credit rationing in this market segment. The concern with loan repayment among the formal lenders is given more emphasis and determines the amount of credit actually disbursed to the borrower compared with the amount applied for. Among the informal lenders, the deviation between the amount applied for and that received is attributed to their limited resource base. The result is a credit gap capturing those borrowers who cannot get the type of credit they need from informal sources, and yet do not qualify for credit from the formal sources due to their lending terms and conditions. We therefore observe two types of credit rationing whereby those who are credit constrained are discouraged from seeking credit due to the lending terms and conditions, and loan quantity rationing whereby those who apply receive less than they applied for. The small number of respondents who used credit is attributed to lack of information about credit and lack of security. As already seen, only 15% of the sample was not credit constrained, although only 49% revealed their demand by applying for credit. For the remaining 36%, their perception about the credit market implies a lack of supply, which creates lack of demand, displayed in lack of revealed demand for credit through application. This also tends to support the argument that there are a number of obstacles preventing the transformation of potential demand into revealed demand in Chattishgarh . Although potential borrowers need credit, and may have the ability to repay the loans, the lending terms and conditions, especially by the formal institutions, prevent them from seeking credit. Due to lack of information about the borrowers, lenders are not able to extend loans to some of the applicants. On the other hand, borrowers' ignorance about

existing credit opportunities hinders them from seeking credit. Hence markets with information asymmetry and problems of contract enforcement result in loan rationing by the lenders and eventually the inability to satisfy the existing demand as implied by these results.

To further test the argument that different reasons prevent formal and informal credit markets from satisfying the potential demand, the loans from formal and informal segments were compared. The loan amounts (applied for and received) from both formal and informal credit sources for the different credit categories were found to differ significantly, as shown in Table 4.

Table 4: The loan amount

Credit category	Mean value (Rupees)		F-statistic	Significance level
	Formal	Informal		
Initial capital	73,723	3,576	39.1468	0.0001
Operating capital	44,196	10,718	17.7800	0.0001
Past credit, amount applied for	51,961	8,968	27.9245	0.0001
Past credit, amount received	29,018	5,835	15.9467	0.0001
Current credit, amount applied for	18,692	7,372	5.3760	0.0228
Current credit, amount received	14,461	6,446	2.8866	0.0929

Source: computed from collected data

For initial capital, operating capital and past credit, the differences in the means of amounts of credit from formal and informal sources were significant at less than the 5% level. The amounts borrowed from formal sources were significantly higher than those from informal sources. The difference in the current credit applied for was also significant at less than 5% level. However, the difference in the current credit received between the formal and informal sources was only significant at less than the 10% level. For all the credit categories, the amounts received from formal sources were significantly higher than those from informal sources. This may be attributed to the limited resource base of the informal market, which determines what they can lend out to any individual borrower. Loan quantity rationing is therefore likely to result from limited resources of the lenders. It is argued that in the informal market, since moneylenders are usually the most expensive source of credit, demand for their credit normally comes from those without any other options. Despite the probability of loan requests being granted, their lending terms like short maturity and high interest rates make their credit unattractive for working capital and fixed investments. This is reflected when the use of the different informal market segments is compared. A majority of the respondents (70%) got their operating capital from family friends and relatives, while 81% got their initial capital from the same source. The commercial lenders therefore seem to be least attractive to borrowers. Hence

for initial and operating capital, borrowers in this sample appear to borrow from close friends and relatives as a means of pooling risks.

A comparison based on the heterogeneity of the informal market was made of the different credit categories between the different segments (Table 5). The amounts differed significantly between the different market categories.

Table 5: Credit categories

Credit Category	Family & Friends	Group Based	Mean Value(Rs) Commercial lenders	F Statistic	Significance
Initial capital	3,681	5,600	1,518	12.386	0.0001
Operating capital	10,142	3,580	11,942	8.4291	0.0001
Past credit, amount applied for	10,461	2,284	23,012	8.4824	0.0001
Past credit, amount received	8,870	1,703	11,252	6.4357	0.0001
Current credit, amount applied for	NA*	2,575	19,020	9.3884	0.0002
Current credit, amount received	NA*	2,452	16,983	8.1643	0.0006

\*Means the market segment was not used. The difference therefore applies to group based and commercial lenders.

Source: Computed from collected data.

The table shows that even within the informal market, there are differences between the different segments in the amount of credit applied for and received, which may imply that the different informal market segments serve different borrower categories, depending on the amount of credit they can offer. Differences in loan characteristics represent different lender types since in the informal market, different lenders are able to offer different credit packages to meet the needs of their clients. Units of informal finance therefore vary mainly because they are purpose oriented and develop to meet the demand for specific financial services. Group based credit programmes are an important example in this respect since they are formed as a means of mobilizing funds for a specific group of clients. Two reasons can explain the differences in loans from formal and informal sources: the resource base of both formal and informal markets, and the credit rationing behaviour of formal markets. From the resource base line of argument, informal lenders possess a relatively small resource base, which restricts the amount of credit they can give out to any individual borrower, although they can serve a larger number of borrowers. This is unlike formal lenders, who possess a relatively bigger resource base and can give out larger amounts of loans per borrower, but because of their lending terms and conditions, they are only able to serve a relatively smaller number of borrowers. The lending terms and conditions imposed by formal lenders (emphasizing

collateral security) ration a large number of borrowers out of the credit market, leaving only the few who can afford the required collateral. Lenders would like to identify borrowers most likely to repay their loans since the banks' expected returns depend on the probability of repayment. In an attempt to identify borrowers with high probability of repayment, banks are likely to use the interest rates that an individual is willing to pay as a screening device. This is likely to be reflected in higher loan amounts applied for and disbursed by the formal sector lenders to the borrowers after rationing out those who do not qualify. The same argument can be extended to the different market segments of the informal sector.

This part of study presents the nature and extent of the use of informal sources of credit. Out of the total sample of 334 enterprises, more than three-quarters of the respondents (86%) stated that they got their initial capital for starting their enterprises from informal sources. Some 87% of respondents also stated that they got their operating capital from informal sources. Different categories of informal credit were used. Table 6 shows the distribution of the use of different categories of informal credit sources for both initial and operating capital. The results indicate that own savings at home was the most common source of finance used for both initial and operating capital. For initial capital, this was followed by loans from parents and close relatives and the sale of property, while for operating capital, sale of property, profits and supplier's credit were the next most common sources. Personal savings again appear to be the most used source in the informal market.

Table 6: Distribution of the use of credit

Sources of capital	Initial capital		Operating capital	
	Number	Percentage	Number	Percentage
Own savings at home	141	49 (42)	157	53 (47)
Loan from Societies	7	2 (2)	16	5 (5)
Loan from moneylender	3	1 (1)	1	.3 (.3)
Parents/close relatives	77	27 (23)	1	.3 (.3)
Supplier's credit	6	2 (2)	34	11 (10)
Sale of own property/profits	40	14 (12)	84	28 (25)
Income from farming	8	3 (2)	4	1 (1)
Gift from parents	4	1(1)	0	0
Total	286	100 (86)	297	100 (89)

*Note:* figures in bracket are percentages of the total sample.

*Source:* Computed from collected data.

We find that borrowing for family and social obligations were the most common reasons. When the informal market is fragmented into the three categories, we see that for initial and operating capital, own savings at home, friends and relatives provided more than 50% of the loans from the informal

market. This may imply a practice of trading risks within the community as established by Udry (1994). Surveys of rural finance in Chattishgarh suggest that enterprises would use moneylenders only as a last resort or in emergency. Indeed in this study, less than 5% of the enterprises got credit from moneylenders, while none used moneylenders for initial or operating capital. Therefore it is apparent that although informal credit provides easy access to small-scale borrowers, the lending terms in certain segments make them unattractive and inaccessible to some borrowers.

Table 7: Sources of credit

Source	Past Credit Use		Current Credit Use *	
	Number	Percentage	Number	Percentage
Societies	43	34(26)	42	51(44)
Money Lender	2	2(1)	1	1(1)
Friends and relatives	19	15(12)	8	10(8)
NGO	46	36(28)	13	16(14)
Supplier's credit	11	9(7)	13	16(14)
No idea about institution name	4	3(2)	4	5(4)
Missing	2	2(1)	1	1(1)
Total	127	100(77)	82	100(86)

*Note:* Figures in brackets are percentages of the total who had ever borrowed. Current credit use here refers only to those who succeeded and whose applications were still being processed.

*Source:* Computed from collected data.

We have seen that more enterprises used informal sources of credit than formal sources. In both formal and informal markets, personal savings was the dominant source of credit, especially for initial capital, pointing to the limited ability of the financial markets to meet existing credit demand from certain borrowers and reinforcing the argument that small-scale rural based enterprises do not have access to the financial resources of the formal financial sector. Even within the informal market, the different segments display different degrees of accessibility. Most enterprises used personal savings and credit from relatives. The reasons given in this part of study for not using credit or choosing a specific source tend to confirm this difference in accessibility. Evidence of credit rationing was observed in both markets. However, within the informal market, family sources display no rationing, compared with the other categories. Moneylenders were the least used, reflecting their relative inaccessibility. The results also show a fragmentation of the credit market not only between formal and informal credit sources, but also by the distinct characteristics of the clients served. This is reflected in the differences in the loan amounts from different sources. A study of SMEs engaged in non-agricultural activities found that over 50% of the sample had access to commercial bank credit in the form of short-term loans).

and the number was increasing over time. Hence, whereas distinct segments of the formal and informal credit market serve the credit needs of enterprises engaged in specific activities, at the general level, existing evidence suggests that formal financial institutions, including commercial banks, are more accessible to those enterprises engaged in nonagricultural enterprises. The credit market in Chhattisgarh therefore seems disaggregated into different segments, with each serving different types of borrowers.

### **Conclusion**

The Research had the objective of assessing the role of the institutional lending policies of formal and informal credit institutions in determining the access to and use of credit facilities by small-scale entrepreneurs in rural Chattishgarh. The results showed that most enterprises (51%) had not used credit before. Out of those who had, the majority (67%) had used informal sources. The major reasons for not seeking credit were lack of information about credit and lack of required security. The use of specific credit sources, either formal or informal, was justified as the only source available. This may indicate the existence of only a limited range of options to choose from. In both formal and informal markets, personal savings was the dominant source of finance, especially for initial capital, which may point to the inability of the financial markets to meet the existing credit demand and reinforces the argument that small-scale rural based enterprises do not have access to the financial resources of the formal financial sector. When credit access is seen in terms of the rationing behaviour of lenders, we find that 15% of the sample was credit constrained, although only 49% had ever applied for credit. Evidence of credit rationing was observed in both markets, as indicated by the significant difference between amount applied for and amount received. Within the informal market, however, family sources display no rationing compared with the other market categories. Moneylenders were the least used, reflecting their relative inaccessibility. Loan rationing in the informal credit market is attributed to the limited resource base, while for the formal sector it is due to the lending terms and conditions. A comparison of household and enterprise characteristics between those who had used credit and those who had not, as well as between those who used formal sources and those who used informal sources, showed that the differences were not significant in both cases. However, the loan terms and conditions all differed significantly between formal and informal credit sources. It is argued that the limited credit use is due to an inadequate credit market, which means that enterprise characteristics may not be important in determining the use of credit. Limited access to credit is therefore seen as a result of supply-side constraints, and not the demand side. We further argue that the fact that those who did not seek credit because they had relatively higher wealth values may not necessarily mean that they did not need credit. Rather, it may mean that the type of loans they require do not exist, implying that the credit market does not serve the needs of enterprises seeking to expand their business. The result is, therefore, a credit gap capturing those enterprises too big for the informal market, but not served by the formal market. In Chattishgarh

different lenders are able to offer different packages in the credit market. Data from this study show that each single lender had a specific credit package offered to borrowers meeting specific conditions. This was particularly true for the group based credit programmes supported by NGOs. We can therefore argue that in the Chattishgarh credit market, the diversity in informal credit with respect to loan characteristics represents only the different lender types offering different types of loans. The result is that potential borrowers fail to seek credit from informal sources because they do not provide the required credit package.

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## **SCIENTIFIC PROCESSING AND ESTIMATED LOSSES DUE TO TRADITIONAL PROCESSING OF COTTONSEED**

SAVANAM CHANDRA SEKHAR AND V.K. BHASKARA RAO

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Cottonseed is considered as golden goose. Besides yielding wholesome oil, branded as 'Heart Oil', it yields other valuable by-products like linters, hulls and cottonseed extraction. However, a fairly large portion of oil and almost the entire quantity of by-products like linters, hulls are lost due to processing of cottonseed through the traditional method. It is palpable that India loses average worth about Rs. 30000 million every year due to the traditional processing of cottonseed. It is therefore, considered essential to shift from traditional to scientific processing of cottonseed in the larger interest of the Nation. This article elevates the amount of losses of valuable cottonseed by-products due to traditional processing and progress of scientific processing and provides possible remedies to curb glitches therein.

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### **Introduction**

Cottonseed processing season generally commences in the month of November and ends in the following October. Feeding traditionally prepared UD cake to cattle with oil content as high as 7% virtually amounts wastage of more than 3 lakh tonnes of cottonseed oil every year. It also loses linters average worth about Rs. 3250 million and hulls average valued at about Rs. 5800 million every year during the past decade. These losses have been quantified in Table 1.

Cottonseed available for processing during the year 2000-01 is 36.66 lakh tonnes out of which 35.13 lakh tonnes (95.83%) processed through traditional (crude) method by simply crushing seeds as such without undergoing the process of delinting, decortication, dehulling etc., and the remaining 4.17 percent (1.53 lakh tonnes) processed scientifically. The traditional process is primitive and yields only 12-13 percent crude oil which is inferior in quality and dark in colour. It produces about 80-85% cottonseed cake which has low nitrogen and high fibre content. The process also results in passing out of about 7% oil in oilcake which virtually considered as wastage. The country loses around 4 to 5 lakh tonnes of cottonseed oil this way every year due to wrong feeding of undecorticated cottonseed oil cake to the cattle.

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Table 1: Progress of scientific processing of cottonseed and estimated losses due to traditional processing of cottonseed for the period 2000-01 – 2009-10

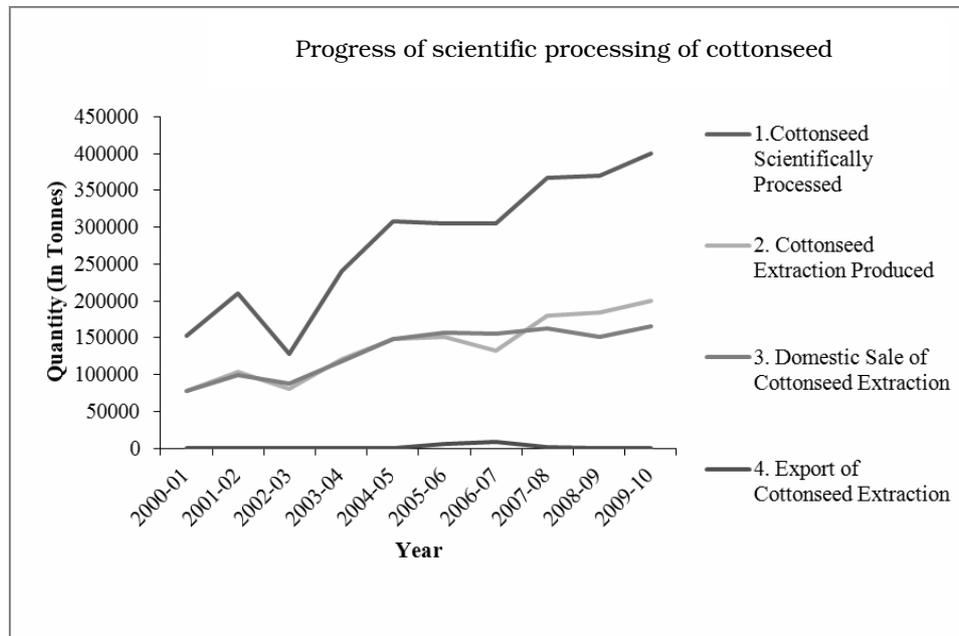
	2000-01		2001-02		2002-03		2003-04		2004-05		2005-06		2006-07		2007-08		2008-09		2009-10	
Availability of Cottonseed for Processing	36.66		4131		35.29		45.28		63.90		68.59		80.24		91.92		91.59		93.24	
Cottonseed Processed Scientifically	1.53		2.11		1.28		2.40		308		306		3.05		3.67		3.7		4.00	
Percentage of Quantity Processed Scientifically to the total availability of cottonseed for processing;	4.17		5.11		3.62		530		4.82		4.46		3.80		3.99		4.03		4.70	
Estimated Annual Loss due to Traditional Processing:	Qty	Value																		
i) Cottonseed Oil (7%)	2.56	10336.3	2.74	11055.0	2.38	9597.9	3.18	13101.6	4.47	15449.2	4.38	15928.7	5.40	22680.0	6.43	37399.5	5.85	25900.2	6.25	24848.1
ii) Linters (4%)	1.4	1378.5	2.56	1470.1	1.36	1279.9	1.82	1729.0	2.55	2550.0	2.50	3000.0	3.09	3708.0	3.68	8405.2	3.34	5746.6	3.57	12202.2
iii) I-hulls (27%)	9.88	3051.2	10.58	3264.1	9.18	2832.9	12.27	3764.4	17.23	2848.1	16.88	5570.4	20.85	6880.5	24.81	9069.2	22.57	15087.6	24.09	13862.6
iv) Soap Stock (0.8%)	0.2	97.5	0.31	104.3	0.27	90.7	0.36	162.0	0.51	167.7	0.50	190.0	0.61	213.5	0.74	2768.0	0.67	3009.2	0.71	312.3
Total Loss	14.19	14863.5	15.19	15893.5	13.19	13801.4	17.63	18757.0	24.76	21015.0	24.26	24699.1	29.95	33482.3	35.66	57641.9	32.43	49743.7	34.62	50925.3

Source: AICOSCA, Mumbai

Furthermore, it also loses other valuable by-products like Linters and Hulls in traditional processing. It is reported that about 1.46 lakh tonnes of linters valued at Rs. 1378.5 million lost due to traditional processing of cottonseed. Besides of this, 2.56 lakh tonnes of cottonseed oil worth about Rs. 10336.5 million lost by way of passing the oil in oilcake which is of little use to the cattle. Hulls are also completely lost due to traditional processing. Loss of cottonseed hulls is 9.88 lakh tonnes valued at Rs. 3051.2 million. The total loss of all by-products of cottonseed due to traditional method during the year 2000-01 is 14.19 lakh tonnes valued at Rs. 14863.5 million.

Cottonseed available to the industry for processing during the year 2001-02 is 41.31 lakh tonnes, of which only 5.11 percent (2.11 lakh tonnes) of cottonseed processed through scientific manner and remaining 39.20 lakh tonnes i.e. 94.89 percent processed through traditional method. Despite gradual improvement in the volume of cottonseed processed scientifically in the country over last 3 years, still it is substantially lower. This underlines the tremendous scope for improvement. About 1.56 lakh tonnes of linters valued at Rs. 1470.1 million; 2.74 lakh tonnes of cottonseed oil worth Rs. 11055 million; and 10.58 lakh tonnes of hulls valued at Rs. 3264.1 million lost due to traditional method. The total loss of all by-products due to traditional method of processing cottonseed during 2001-02 is 15.19 lakh tonnes valued at Rs. 15893.5 million.

Figure 1: Progress of scientific processing of cottonseed for the period 2000-01 – 2009-10



Production of cottonseed extraction also showed a significant rise to 103486 tonnes in the year 2001-02 as compared to 77604 tonnes during the previous year, a rise of about 33.3 percent. The domestic sale of cottonseed extraction

Table 2: Progress of scientific processing of cottonseed for the period 2000-01 - 2009-10

(in tonnes)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Cottonseed Scientifically Processed	153484	211000	128000	240000	308000	306000	305000	367000	370000	400000
Cottonseed Extraction Produced	77604	103486	80509	121060	148596	151344	131944	180000	185000	200000
Domestic Sale of Cottonseed Extraction	77718	100206	88707	118091	148625	157008	155368	163306	151666	165225
Export of Cottonseed Extraction	---	---	---	---	---	5529	9398	1098	---	---

Source: AICOSCA, Mumbai

also increased to 100206 tonnes as compared to 77718 tonnes in the previous year. There has not been any export of cottonseed extraction during the year 2001-02.

Cottonseed available for processing during the year 2002-03 is 35.29 lakh tonnes, of which 34.01 lakh tonnes (96.37 percent) processed through traditional method and 1.28 lakh tonnes (3.62 percent) processed scientifically. As far as losses due to traditional processing of cottonseed is concerned, 1.36 lakh tonnes of linters valued at Rs. 1279.9 million; 2.38 lakh tonnes of cottonseed oil worth Rs. 9597.9 million; and 9.18 lakh tonnes of hulls valued at Rs. 2832.9 million lost. The total loss of all cottonseed by-products during the year is 13.19 lakh tonnes valued at Rs. 13801.4 million. During the year 2002-03, production of cottonseed extraction (an end product of scientific processing) lowered at 80509 tonnes as compared to 103486 tonnes produced in the previous year. Domestic sale of cottonseed extraction also lowered at 88707 tonnes as compared to 100206 tonnes sold in the previous year. Fall in production and sales of cottonseed extraction during the year owes mainly fall in cottonseed production.

Availability of cottonseed for processing to the industry during the year 2003-04 is 45.28 lakh tonnes as compared to 35.29 lakh tonnes in the previous year. It is registered that 2.40 lakh tonnes (5.30 percent) of cottonseed is processed scientifically as compared to 1.28 lakh tonnes processed in the previous year. The substantial rise in processing over previous year owes to bumper crop of cotton during the year 2003-04. Nevertheless, this is the highest quantity processed scientifically over a decade. Losses of cottonseed by-products due to traditional processing registered high. About 1.82 lakh tonnes of linters valued at Rs. 1729 million; 3.18 lakh tonnes of cottonseed oil worth Rs. 13101.6 million; and 12.27 lakh tonnes of hulls valued at Rs. 3764.4 million lost due to traditional processing. The total loss of all by-products of cottonseed is 17.63 lakh tonnes valued at Rs. 18757 million. Production of cottonseed extraction during the year 2003-04 is 121060 tonnes as compared to 80509 tonnes produced in the previous year. Domestic sale of cottonseed extraction is registered high at 118091 tonnes as compared to 88707 tonnes sold in the previous year.

The availability of cottonseed for processing during the year 2004-05 is 63.90 lakh tonnes, of which only 4.82 percent (3.08 lakh tonnes) processed scientifically as compared to 5.30 percent processed in the previous year. This is the first time in the decade that the quantity of cottonseed processed scientifically in the country crossed 3 lakh tonnes barrier. This is a matter of rejoice. However, there is still long way to go. The losses due to traditional processing of cottonseed are 2.55 lakh tonnes of linters valued at Rs. 2550 million; 4.47 lakh tonnes of cottonseed oil worth Rs. 15449.2 million; and 17.23 lakh tonnes of hulls valued at Rs. 2848.1 million. The total loss of all by-products figured at 24.76 lakh tonnes valued at Rs. 21015 million. Production of cottonseed extraction (decorticated de-oiled highly proteinous cattle feed) during the year 2004-05 is 1.49 lakh tonnes as compared to 1.21 lakh tonnes produced previous year, a rise of about 23%. The domestic sale of cottonseed extraction during the year registered at 1.48 lakh tonnes

as compared to 1.18 lakh tonnes sold during previous year, a rise of about 25%.

Cottonseed available for processing during the year 2005-06 is 68.59 lakh tonnes. Emerging golden era for cotton had its impact of cottonseed processing also. In the year 2004-05, cottonseed processed scientifically had crossed a barrier of three lakh tonnes. It has surpassed the barrier again by processing 3.06 lakh tonnes scientifically during the year 2005-06. Although the progress appears encouraging, the situation is far from complacency since only 4.46 percent of the cottonseed is subjected to scientific processing in the year 2005-06. About 2.50 lakh tonnes of linters valued at Rs. 3000 million; 4.38 lakh tonnes of cottonseed oil worth Rs. 15928.7 million; and 16.88 lakh tonnes of hulls valued at Rs. 5570.4 million lost on account of traditional crude method of cottonseed processing. The total loss of all by-products is 24.26 lakh tonnes valued at Rs. 24699.1 million during the year 2005-06. Production of cottonseed extraction (highly proteinous cattle feed with protein content as high as 42 - 44%) during the year 2005-06 is about 1.51 lakh tonnes as compare to 1.48 lakh tonnes in the previous year. The domestic sale of cottonseed extraction also showed a rise with 1.57 lakh tonnes as compared to 1.49 lakh tonnes sold previous year.

Availability of cottonseed for processing during the year 2006-07 is 80.24 lakh tonnes as compared to 68.59 lakh tonnes available in previous year. Out of this only 3.05 lakh tonnes i.e. about 3.80 percent of cottonseed processed scientifically. It doesn't mean that 96.20 percent of cottonseed is processed through traditional method which is a causing concern for Indian economy. The losses owing to the traditional processing registered at 3.09 lakh tonnes of linters valued at Rs. 3708 million; 5.40 lakh tonnes of cottonseed oil worth Rs. 22680 million; and 20.85 lakh tonnes of hulls valued at Rs. 6880.5 million. The total loss of all cottonseed by-products during the year 2006-07 is 29.95 lakh tonnes valued at Rs. 33482 million. Production of cottonseed extraction during the year 2006-07 is 131944 tonnes as compared to 151344 tonnes produced in the previous year. Domestic sale of cottonseed extraction registered at 155368 tonnes in the year 2006-07 as compared to 157008 tonnes sold during the previous year.

Cottonseed available for processing to the industry in the year 2007-08 was 91.92 lakh tonnes, of which only 3.67 lakh tonnes (3.99 percent) of cottonseed processed scientifically. The practice of processing as much as 88.25 lakh tonnes (96.01%) of cottonseed by traditional (crude method) is costing country loss of as much as Rs. 57640 million. This huge loss invariably accounted from 3.68 lakh tonnes of linters valued at Rs. 8405.2 million; 6.43 lakh tonnes of cottonseed oil worth Rs.37399.5 million; and 24.81 lakh tonnes of hulls valued at Rs. 9069.2 million. Production of cottonseed extraction during the year 2007-08 is 180000 tonnes as compared to 131944 tonnes produced in the previous year. Domestic sale of cottonseed extraction registered at 163306 tonnes in the year 2007-08 as compared to 155368 tonnes sold in the previous year.

The availability of cottonseed for processing during the year 2008-09 is 91.59 lakh tonnes, of which 3.7 lakh tonnes subjected to scientific processing i.e. delinting, dehulling and solvent extraction. Net result is that the country lost cottonseed by-products worth Rs. 49743.7 million. This loss includes 5.85 lakh tonnes of precious cottonseed oil (heart oil) worth Rs.25900.2 million; 3.34 lakh tonnes of linters valued at Rs. 5746.6 million; and 22.57 lakh tonnes of hulls valued at Rs.15087.6 million. What the country loses is a wealth of by-products having ready market both within and outside the country. Production of cottonseed extraction during the year 2008-09 is 185000 tonnes as compared to 180000 tonnes produced in the previous year. Domestic sale of cottonseed extraction registered at 151666 tonnes in the year 2008-09 as compared to 163306 tonnes sold in the previous year.

The availability of cottonseed for processing for the year 2009-10 is 93.24 lakh tonnes, of which only 4.70 percent (4.00 lakh tonnes) processed scientifically as compared to 4.03 percent processed in the previous year. This is the first time in the decade that the quantity of cottonseed processed scientifically in the country reached 4 lakh tonnes barrier. This is a matter of exult. The losses due to traditional processing of cottonseed comprises 3.57 lakh tonnes of linters valued at Rs. 12202.2 million; 6.25 lakh tonnes of cottonseed oil worth Rs. 24848.1 million; and 24.09 lakh tonnes of hulls valued at Rs. 13562.6 million. The total loss of all by-products reckoned at 34.62 lakh tonnes valued at Rs. 50925.3 million. Production of cottonseed extraction during the year 2009-10 is 200000 tonnes as compared to 185000 tonnes produced in the previous year. Domestic sale of cottonseed extraction registered at 165225 tonnes in the year 2009-10 as compared to 151666 tonnes sold in the previous year.

### **Export of Cottonseed Extraction**

There is a demand for cottonseed extraction (meal) in the international market due to high protein content (about 40 to 42 percent) with almost nil oil content (Hollon *at el.*, 1958). In fact there is no export of cottonseed extraction after February 1996 except for 10492 tonnes in May, 1997 and 954 tonnes in February, 1998. About 7098 tonnes of cottonseed extraction was exported during the year 2007-08 as compared to 9398 tonnes in 2006-07 and 5529 tonnes during 2005-06. High internal prices vis-vis international prices and the protein of Gossypol are limiting the export of cottonseed meal. It seems expedient to evolve a simple less expensive technique operational at the plant level to reduce gossypol content (Huston *at el.*, 1990). Once the gossypol content is controlled, cottonseed meal can also be used both as fish and poultry feed for which there is international demand (Adams *et al.*, 1960; Baliga and Lyman, 1957). At present only Soyameal has been brought under Videshi Krishi and Gram Udyog Yojana (VGUY) for financial incentive for export. It is urgently necessary to bring not only cottonseed meal but also other meals under the above scheme. Cottonseed meal is an end product of scientific processing of cottonseed. At present only about 4% of the cottonseed is processed scientifically and as consequence the country is losing by-products worth average about Rs. 30000 million every year. Increase

in export of cottonseed meal will provide boost to scientific processing which in turn will reduce the recurring National loss of valuable by-products including precious cottonseed oil.

There is a shortage in domestic requirement of vegetable oil. About fifty percent of Indian requirement of vegetable oil is met through import. India has imported about 44 lakh tonnes of vegetable oil in the year 2004-05. In the year 2007-08 (Nov-Oct), India has imported 56 lakh tonnes of vegetable oil, spending precious foreign exchange worth Rs. 240000 million. In the year 2008-09 the import is about 75 lakh tonnes thanks to the debatable government policy of duty free import of crude vegetable oil. In spite of these heavy imports vegetable oil prices are skyrocketing due to inadequate indigenous production and increasing trend of consumption. Wasting about 5 to 6 lakh tonnes of cottonseed oil from indigenous production in the background of huge import to meet the domestic requirement is a tragic happening which a country like India, can ill-afford. Except All India Cottonseed Crushers' Association (AICOSCA), there is hardly any effort by the extension agencies whose network is spread right up to the grass root level at the heavy cost to the exchequer, to prevent these losses.

It is a sardonic commentary on nature of people perception that cottonseed oil still, not recognized as an important source of edible oil in India, in spite of the fact that it is contributing about 10 to 11 lakh tonnes cottonseed oil every year to the country's vegetable oil production. Further, the present level of production can easily be raised by about 40 percent even with available raw material by application of modern processing technology (Chaudhuri and Selvaraj, 1985). Indian import bill is swelling to a whopping Rs. 150000 million due to increasing use of vegetable oil for bio-fuel. Palm oil is a major constituent of Indian vegetable oil import. This oil is also being increasingly utilized for production of bio-fuel in major producing countries like Malaysia and Indonesia which is driving the prices northwards (Coppock, 1984; Che Man *et al.*, 1999).

Cotton linter is a valuable and vital by-product for use within the country. Indian Ordnance factories are consuming about 4000 tonnes of cotton linters every year for production of propellants used for gun ammunition and various missiles like Priyanka, Trishul etc. It is understood that some textile units in China are running their plants exclusively using cotton linters (Cheng and John, 2003). In China ginning and delinting is reported followed in the same processing unit where as in India, ginning of cottonseed and processing of cottonseed are two separate entities. Cotton linters are completely lost due to traditional processing of cottonseed. Despite of its domestic consumption, India has exported cotton linters worth about Rs. 74.3 million during the year 2003-04. During the financial year 2005-06 India has exported cotton linters worth more than Rs. 200 million. There is still wide scope for exporting linters at higher quantities.

#### **Factors attributing to slow progress of scientific processing of cottonseed**

Apparently it looks that the blame for slow progress of scientific processing should lie on the present cottonseed processors. This is far from truth. The

total processing cost of one tonne of cottonseed through the traditional and scientific method comes to Rs. 9110 and Rs. 9460 respectively. The net realization comes to Rs. 301 and (-) 630 respectively. Thus, at present there is loss of Rs. 329 per tonne of cottonseed processed scientifically. This does not constructed to mean that the modern processing technology, adopted elsewhere in the developed world is not cost effective in India (Alonzo Bettis Cox, 1949).

There is wide price difference between Cottonseed Cake – a product of traditional processing and Cottonseed Extraction – an end product of scientific processing. Prices of cottonseed extraction containing protein percentage as high as 40-42% are quoted as Rs. 5800 per tonne whereas cottonseed cake with only 20-22% protein content remained higher about by Rs. 800 per tonne i.e. at Rs. 6600. The cattle feeders in India still prefer undecorticated cottonseed cake since it contains oil in spite of the fact that scientifically it has been proved that oil content in the oil cake has negligible role in either raising the milk yield or increasing fat percentage in the milk (Bath, 1976; Jones and King, 1996). It is the protein content in the cattle feed that contribute to keeping cattle in good health, resulting in higher milk yield. The protein content in the cottonseed extraction is as high as 40 to 42 percent, where as it is only 20 to 22 percent in cottonseed cake which cattle feeders prefer and pay about Rs. 500 to Rs. 800 per tonne more. Where as in developed countries, cattle feed is sold on the basis of protein content, in India, general preference is for oil content in the cake. Indeed, the most important ingredient of cattle feed is protein. International trade on cattle feed takes place on protein content only (Alderks, 1948). This gross ignorance is costing the country a loss of cottonseed by-products worth about Rs. 30000 million every year and depriving the protein starved cattle population of nutritious feed.

#### **Remedial measures for change over from Traditional Method to Scientific Processing**

In the year 2004, the Washington based International Cotton Advisory Committee (ICAC) has carried out survey of 30 cotton producing countries. The outcome of the survey reveals:

- I. India (along with Argentina) is the least expensive Cotton Producing Country in the World.
- II. Net cost of production of one kilogram of cotton lint is the lowest in India and the highest in USA.
- III. The cost of production in India ranges from \$0.50 to \$0.86 per kg in different zones with average \$0.70 per kg.
- IV. The net cost is lowest in India due to high value of cottonseed that finds many uses in the country.

In spite of such prominence recognized by a reputed international organization like ICAC, cottonseed is completely out of the ambit of development plan, either of the Government of India or the State Governments. The Technology Mission on Oilseeds and Pulses (TMOP) and

the Technology Mission on Cotton (TMC), the two important development arms of the Government have not yet thought it expedient to include cottonseed in their development plans. The TMC, which has embarked an ambitious plan for modernization of Indian ginning factories, would consider adopting Chinese pattern of in-built system of delinting in India on priority basis to save huge loss of cotton linters incurred every year.

**Use of cottonseed extraction in compound cattle feed:** People are passing through a fast changing era when traditional cattle feeds are being replaced by the nutritionally balanced compound cattle feed (Calhoun, 1989). The compound feed manufacture will do a yeoman service to the nation by using larger quantities of proteinous cottonseed extraction (Deoiled cake) in manufacture of compound cattle feed, fish feed and also poultry feed, since it would encourage scientific processing of cottonseed and thereby reduce enormous national losses of cottonseed by-products caused by traditional processing (Jones, 1981; Waldroup, 1981; Dorsa *et al.*, 1982).

**Delinting seed – adoption of China pattern:** It is reported that in China there is an in-built system of delinting cottonseed after ginning. This practice not only yields a large quantity of linters-prized raw material but also better quality of oil as well as higher recovery of oil.

Bulk density of cottonseed (undelinted) is about 40 percent more than the delinted cottonseed. Thus, about 40 percent more seeds could be transported and stored in the same area if delinted. The cotton linters can also be pressed by the same baling press used for pressing cotton lint and may thereby provide additional work to the ginning and pressing factories which have a short span of working. Although cotton linters contribute to maximum 5 to 9 percent of the weight of cottonseed, it consumes disproportionately higher power of about 60 to 65% of the total power in the integrated cottonseed processing units. This high cost can be brought down substantially if delinting is resorted to at the ginning factories itself by installing inexpensive small delinting machines in the existing ginning factories.

It is urgently necessary to adopt the practice of delinting seed after ginning of cotton to reap the above benefits. This aspect can form an integral part of the existing scheme on modernization of ginning factories being executed by the TMC.

**Modernization of Cottonseed Processing Machinery:** Most of the cottonseed processed in the country is through traditional ghani or expeller. Machinery used even where cottonseed is processed in a scientific manner is also quite old and inefficient. Delinting and dehulling are two important steps in processing cottonseed in a scientific manner. Comparative cost of operation of the existing as well as modern machinery for delinting comes to about Rs. 64.01 lakh and 37.42 lakh, respectively. For dehulling machines the comparative costs for traditional and modern machinery of 150 metric tonnes per day capacity comes to about Rs. 24.18 lakh and Rs. 15.30 lakh, respectively. This comparative cost analysis underlines the urgent need for replacing the existing age old processing machinery with modern cost effective machinery which is now easily available abroad.

### Research on Cottonseed

Most of the research work on cotton has so far been confined to cotton lint which forms only 1/3<sup>rd</sup> portion of the seed cotton. The ICAR does not appear to have undertaken any specific programme for development of cottonseed which forms 2/3<sup>rd</sup> portion of the seed cotton. The industry needs to have need based research on cottonseed especially for enhancing the oil content, reducing gossypol contents etc. The specific aspects on which research need to be directed are as follows:

- I. Increase in seed yield per hectare
- II. Increase in oil percentage
- III. Reduction in gossypol content
- IV. Increase protein percentage
- V. Better resistance to micotoxine
- VI. Production of non-shattering seed

It is said that in Cuba, sugar is a by-product of sugarcane. This is a reward to the country which has utilized the by-products of sugarcane so effectively. India needs to learn from this example especially for cotton. By utilizing all the cottonseed by-products effectively, pressure on lint prices would be reduced without loss to the cotton farmers as well as the processors. Besides, about 4 to 5 lakh tonnes of much needed cottonseed oil would be added to the country's vegetable oil production.

### Conclusion

The practice of processing cottonseed by traditional method is costing country on an average loss of as much as about Rs. 30000 million every year in India. It also loses important by-products viz. cottonseed oil, linters and hulls which are of considerable importance in nation's economy. It is therefore, considered essential to shift from traditional to scientific processing of cottonseed in the larger interest of the Nation.

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## **Comparative Study of Life Insurance Companies**

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The Indian insurance industry was thrown open to competition and private sector in the year 2000. The opening up of the industry has helped insurance customers in general and the private insurers in particular. The private insurers have been growing on an average of 77% since its inception. People purchased private sector's insurance products mainly because of their professional approach and better service.

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### **Introduction**

The year 2000 was a defining moment in the history of Indian Insurance. For the first time the sector was opened up to private sector. Today, Insurance happens to be a mega business in India. It is a business growing at the rate of 15 to 20% annually, together with banking services it adds about 7% of the GDP. Yet nearly 80% of the population is without proper life insurance cover. Though the life insurance penetration and the density has reached to 4.10% of GDP and \$ 33.2 respectively in the year 2007-08, it is still very low when compared to international standards. Among the 87 countries studied for insurance penetration and density, India ranks 76<sup>th</sup> and the Indian contribution to the world insurance business was only 1.7% in 2008.

### **Research Methodology**

Both primary and secondary data are used. Survey method was followed for the study. Primary data was collected with the help of questionnaire with open ended and close ended questions posed on insurance policyholders. For the purpose of sampling, the Mumbai city is divided into three stratum, namely, South Mumbai, Western Suburb and the Eastern Suburb. On the basis of the population of Mumbai, the sample size of 400 policyholders were randomly selected and are proportionately divided as 115 from South Mumbai, 115 from Eastern Suburb and 170 from Western Suburb.

### **Growth of Life Insurance Business after Privatization**

In 2000-01, when the industry was opened up for the private players, the life insurance premium was Rs. 34,898.48 crore but the same has grown up to Rs. 2,01,351.41 crore in 2007-08 with a 576.96% growth. Private insurers have improved their market share from 18.10% in 2006-07 to 25.61% in

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2007-08 in the total premium collected during the year. But in the single premium policy sales, LIC is the undisputed leader. The number of policies issued by private insurers grown at 67.40% as against LICs – 1.61% in the same year (Table-1).

Table 1: New policies issued

Insurer	2005-06	2006-07	2007-08
Private sector	38,71,410(73.4)	79,22,274(104.6)	1,32,61,558(67.4)
LIC	3,15,90,707(31.8)	3,82,29,292(21.0)	3,76,12,599 (-1.6)
TOTAL	3,54,62,117	4,61,51,566	5,08,74,157

Note: Figure in brackets indicate growth rate (in per cent).

Source: IRDA Annual Reports 2006-07 and 2007-08

The growth in first year premium was fuelled by increase in sale of unit linked products. This trend is being observed for the last three years (Table-2). The analysis of table -2 reveals that the private life insurance companies' business is mainly dependent on ULIP.

Table 2: Trends in life insurance business-Unit linked insurance

	Unit linked policies %			Non linked policies %		
	2005-06	2006-07	2007-08	2005-06	2006-07	2007-08
Private	82.30	88.75	90.33	17.70	11.25	9.67
LIC	29.76	46.31	62.31	70.24	53.69	36.69
Industry	41.77	56.91	70.30	58.23	43.09	29.70

Source: IRDA Annual Reports 2006-07 and 2007-08

### Analysis of Data

**Policies purchased:** The awareness level of the 400 respondents was taken into account and also their source of information. Overall, Money back policy is the well known policy with 92.00% (368 out of 400), ULIP came second with 81.00% (324 out of 400). Out of the total 855 policies purchased 194 policies were Money Back Policy - the highest. Out of these 194 policies 183 policies were bought from the public sector life insurance company LIC.

Among the 147 ULIP policies purchased, 125 policies were from private life insurance companies. The sector wise analysis reveals that the LIC topped the list with 71.35% while private sector life insurance companies got 28.65%. The study reveals that LIC dominates the market except in ULIP and Pension policies. It dominated especially the Money Back policy (94.32%) and Endowment policy (91.2%). But interestingly when it comes to ULIP private insurance companies are the market leaders with 84.83%. In Pension Policies LIC has a very close edge over private life insurance companies, as pension policy from LIC contributes 51.97% whereas private insurance companies are close at 48.03%. Thus it is obvious that private insurance companies are giving a tough competition to LIC.

**Reason for Purchase:** The analysis for the reasons for purchase of policies reveals that the tax saving (30.74%) is the major reason for buying the insurance products which is closely followed by investment (21.09%) and Life cover & Tax Saving (20.90%). The public sector - LIC's policies are mainly purchased for tax saving (32.97%) while life cover & tax saving (22.12%) rank next. But the private life insurance companies' products are purchased primarily for investment purpose (30.62%).

Table 3: Sector wise reason for purchase of Life Insurance Policies

Reason	Public Sector LIC		Private Sector		Total	
	f	%	f	%	f	%
Tax Saving	243	32.97	77	25.08	320	30.65
Investment	128	17.37	94	30.62	222	21.26
Child education	62	8.41	13	4.23	75	7.18
Safety & security	81	11	30	9.77	111	10.63
Life cover & tax	16	22.12	58	18.89	221	21.17
Retirement	51	6.92	29	9.45	80	7.66
Specific needs	6	0.81	4	1.30	10	0.96
Others	3	0.41	2	0.65	6	0.48
Total	737	100	307	100	1044	100

**Satisfaction level:** Out of the 221 respondents who are customers of LIC, 86 (38.91%) of them indicated their satisfaction level as 'very good', while 108(48.87%) responded as 'good', 9.05% said 'average' but only 1.36% said poor. This shows that the people are happy with the services of LIC. For private sector, 39.29% of the respondents said that the services of private insurance companies are 'very good', while 51.79% of the respondents said 'good', 7.14% respondents said 'average' and 1.79% said 'poor'. This shows that the satisfaction level of private sector insurance companies are little better than that of LIC i.e. by 3.92%.

**Ranking of benefits:** The respondents were asked to respond to the benefits provided by the private sector insurance companies and LIC. The options that the respondents responded were - Better service, Professional approach, Timely claim settlement, Good returns, Attractive scheme, Variety of products, Less premium, Less formalities, Trustworthiness and None of them. They were also asked to rank these benefits. The following is an analysis of benefits.

Majority of the respondents ranked 'Professional Approach' as first, 'Better Service' as second and 'Good Return' as third. From the above results it is clear that people purchased private sector insurance companies' products mainly because of their professional approach and better service.

**Recommendations of customers:** The respondents were asked whether they would like to recommend a particular insurance product /company. Only 344 out of 400 respondents responded. The study revealed that 45.35% of the respondents recommend Public Sector Life Insurance Company - LIC

and only 9.30% of the respondents recommend Private Sector Life Insurance Company. An analysis of the raw data reveals that for LIC, the money back policy is the most recommended policy, while for the Private it is the ULIP.

Table 4: Recommendations of customers

Company	Frequency	Valid Percent
Public Sector	156	45.35
Private Sector	32	9.30
Cant. Say	48	13.95
Public & Private	93	27.03
Public (or) Private	15	4.36
Total	344	100.0

### Findings

It is found that money back policy is the most purchased policy (22.69%) while ULIP is the second most (21.40%) purchased policy. Among the new policies purchased by the respondents after the year 2001, LIC's share was only 39.95% while the private life insurance companies share was 60.05%. This shows that the private life insurance companies could sell 50% more policies than that of the policies sold by LIC. After going through the analysis it is concluded that the growth of LIC is affected because of the growth of private sector life insurance companies. The same is confirmed by secondary data.

The next important finding is that the satisfaction level of the respondents towards private life insurance companies was 3.92% more than the LIC. The respondents have given 'Trustworthiness' (80%) as the major reason for purchase of life insurance products from LIC, on the other hand the private sector respondents gave first rank for 'Professional approach'. This analysis shows that the public sector life insurance company LIC enjoys the 'Government seal', but the private insurance companies were standing on their professional approach and service. The main problem to private sector is when it comes to recommendations of customers, they are not ready to recommend them. This is because of lack of confidence and trustworthiness.

### Conclusion

The majority of the policy holders are buying policies for tax saving only. Life cover becomes the third reason to buy insurance products. This trend has to change. This shows that public has not understood clearly the purpose of insurance. So, it is suggested that the life insurance companies should conduct insurance awareness campaign with the help of advertisements and social groups. The awareness on insurance has to increase at a very young age.

Since the public looks for 'trustworthiness' in a company while buying a

insurance product, it is suggested that the private non life insurance companies should spend on advertisement campaigns, social spending for brand building so as to create trust in the minds of customers. Also, some motivational steps could be taken for the recommendation made by the customers. The other major problem is that the private life insurance companies are heavily depending on market linked policy ULIP. This is not a healthy trend since the market volatility will affect the growth of business. The attractive schemes of private sector will be more attractive and effective if they could add more varieties to attract. The private insurers have to increase efforts to design new products suitable for the market and make use of innovative distribution channels to reach a broader range of the population.

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