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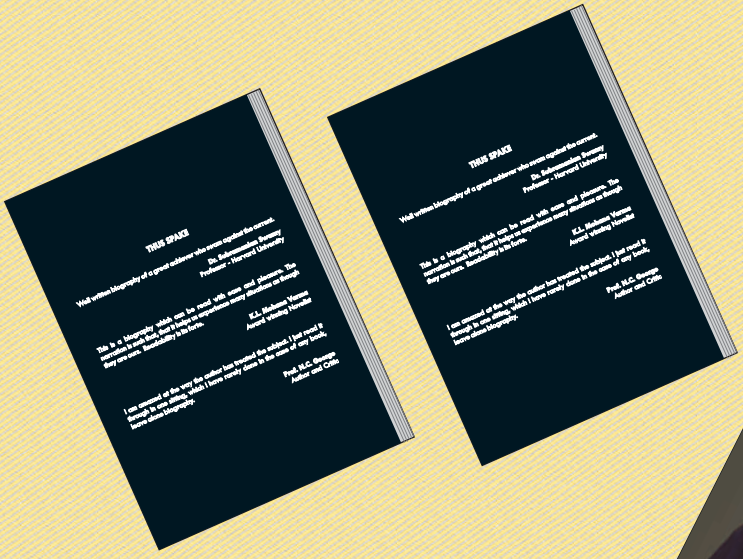
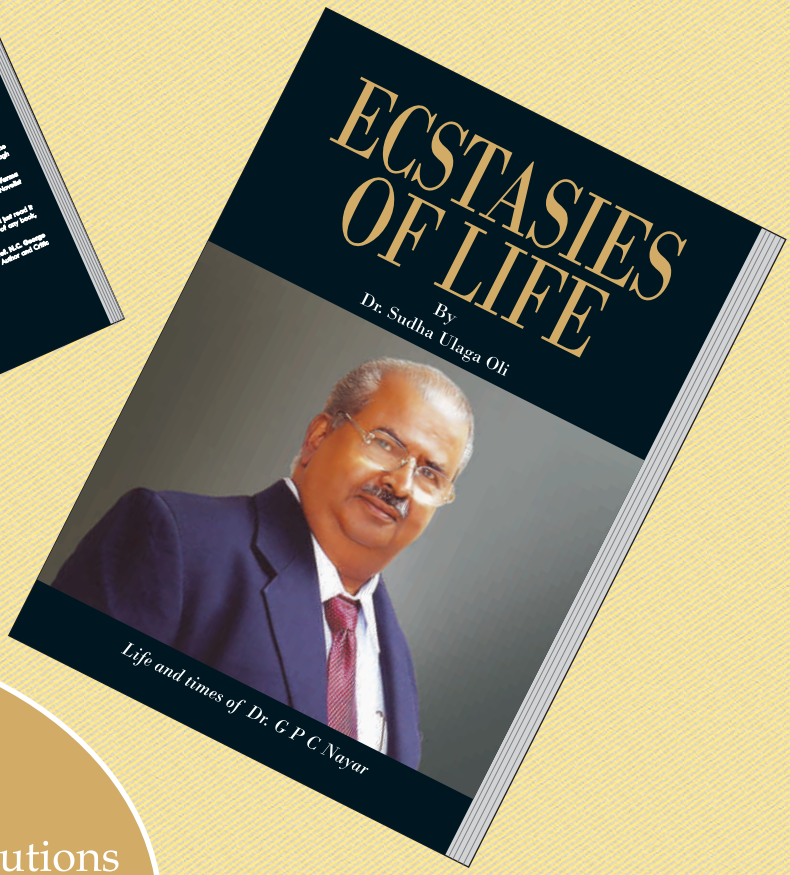
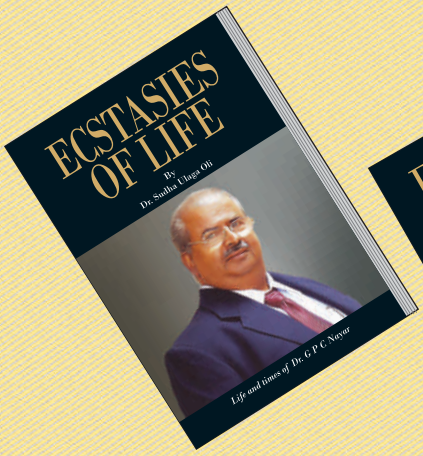
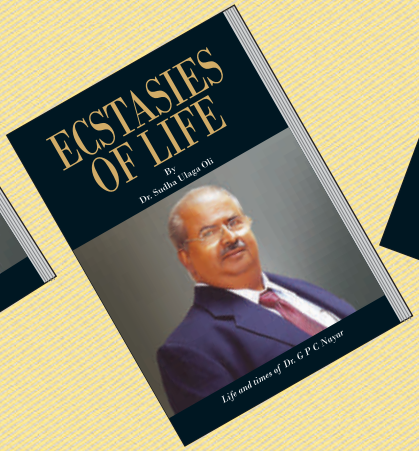




Here's an entrepreneur
who has created
some excellent academic institutions
in an unfriendly environment.
It is a saga of trials and tribulations
in an extremely readable manner
by a consummate
writer in English.





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Articles

Chairman's Overview

The issue of demonetisation is a hot topic for discussion and debate in India during the past more than three months. No doubt, it was a very bold and daring step taken by Prime Minister Narendra Modi with laudable intentions. The move was taken to tackle the rampant corruption, to combat black money and to check fake currency. The pros and cons of the measure still continue to be debated threadbare.

While it is too early to assess the impact of the move, it has definitely led to a shortage of cash in the system, leading to a lot of discomfort for the general public and business. Since our economy is heavily dependent on cash, the measure has hit trade and consumption. The move is likely to take a big toll on the country's growth and output during the current fiscal. Consumption makes up for over 50 percent on India's GDP. Hence, any drop in spending will pull down growth.

It is not the first time in the world that distress has spread in the wake of a currency reform. Therefore, it will be quite interesting to learn about the consequences of similar attempts in other countries in the past. I do hope you will enjoy reading our lead article in this issue, a comparison of demonetisation attempts in India with other countries.

Financial inclusion has become a subject of considerable interest among policy makers, researchers, and other stake holders. The heightened interest reflects a better understanding of the importance of financial inclusion for economic and social development. It indicates a growing recognition that access to financial services has a critical role in reducing extreme poverty, boosting shared prosperity, and supporting inclusive and sustainable development. In this background, we bring to you our second lead article, a study of 12 variables affecting overall financial inclusion across 55 countries.

In addition, as usual, we have in this issue a variety of learned articles on diverse contemporary topics like Behavioural Biases in Investment Decision Making, Demographic Differences of Consumer Exploratory Tendencies, Comprehensive Appraisal in Management Educational Institutions, Organisational Climate and Innovative Work Behaviour, Impact of Packaging Design, New Market Entry Strategies, et al.

I am confident that you will find this issue truly informative and educative.

Dr. G. P. C. NAYAR
Chairman, SCMS Group of Educational Institutions.

SCMS Journal of Indian Management

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Editorial

Welch and Smith and their "rhetoric"

Language is omnipresent in manager's realm. Once we try an experiment or imagine a company, a school, we need language. Language reigns supreme there. The use of language is linked to the action the manager undertakes: designing, motivating others, writing a request to the boss, sending a mail, and reading a report. However the present day manager sees all these from a different angle. He takes words for granted. He ignores words. Words to him are noises of the organization. Around us we hear differing notes on the use of language. It is the thrill of a contemporary zest and zeal for the new ways of managing; "an awe-inspiring flood of words - not all of them useful - about the coming age of enlightened organizations."

Management is rhetoric. What is it that makes certain rhetorical strategies more stirring than others? What rhetorical strategies inspire an audience to act rather than contribute to a growing sense of management hyperbole?

What is the contrast between the rhetoric of Jack Welch and Roger Smith? Welch's rhetoric has been more successful at mobilizing action rather than that of Smith. Both of them were highly visible CEOs. They took charge of their firms in 1981. They tried to champion change, to lead their firms into the 1990s in a transformed state. Welch's rhetoric was more successful at mobilizing action. They relied heavily on promoting their visions of what such a transformation would entail. Only Welch was an expert in this game. Welch's rhetoric showed the effort typically required a deft combination of an imaginative vision of the future, a realistic portrayal of the present, and a selective depiction of the past, which can serve as a contrast to the future. There must be a "creative tension" between reality and vision that inspires people personally to take up the challenge of transformation.

In contrast, Roger Smith tried admirably to portray GM as transforming itself to become the American "21st Century Corporation." His vision of the 21st century was not spelled out in meaningful detail, therefore was uninspiring. The concept remained vague. Smith refused to face the realities of GM during the 1980s. He externalized GM's problems- there were disappointments: "dramatic shift in customer demand," "higher interest rates," and a "deteriorating economy." GM's past is portrayed as great, present as great and future as great. There was little creative tension in Smith's rhetoric.

Unlike Smith, Welch knows how to cook - and the recipe is rhetoric: metaphors and analogies, slogans and maxims. They were not merely numerical data. They were persuasive. They were combined with a powerful delivery style. Welch employed powerful metaphors and analogies to communicate his vision. He meticulously mixed analogy and metaphor to describe vividly the attempts to dismantle the old GE management system. Organizational myths, legends, and sagas employ a different rhetorical technique. Events are drawn from an organization's history involving its employees, the function, and its past and the present. The present rhetoric is revolutionary. But it often fails. The need of the hour everywhere is, we need to find a new rhetoric which shall be for change, yes, for change to create the possibility for action.

Dr. D. Radhakrishnan Nair

Demonetization Comparatistics: India and Others

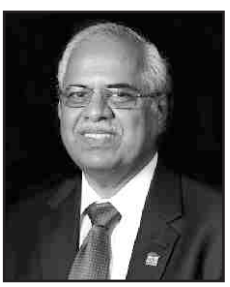
Kishore G. Kulkarni and Poornima Tapas

Abstract

The demonetization decision was believed to have been taken to tackle the rampant corruption, unrecorded (or black money), and control the fake currency that often finances terror activities. Within one week, it was apparent that this step has created big inconvenience as there was severe shortage of new currency.

This was not the first such attempt of demonetization in the world. Other countries have tried it before and have experienced consequences of doing this. The present paper is an exercise in examining other demonetization attempts, and compare them with the Indian situation. Our purpose is to do a survey of macroeconomic situation after demonetization.

Paper is organized in following fashion: Section 1 summarizes the theoretical points of why demonetization is supposed to be carried out. It also explains the theoretical costs and benefits of this decision and explains the Indian situation. Section 2 explains the data of three other countries: Russia, Australia and Zimbabwe. Section 3 carries out summary and conclusion.



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One purpose of this paper is to evaluate the situation in India due to recent demonetization attempt. The other purpose is to compare the Indian situation with the attempts of other countries to ban a currency unit. While we shall initially review the Indian situation, we follow this evaluation by the summary of economic fluctuations that occurred in Russia, Zimbabwe, and Australia. At the outset, one can argue that Australian situation was well managed, Russian situation was dictatorial, and Zimbabwe case was chaotic. These all kinds of lessons can be learned from such an experiment. We begin with arguments of some famous economists about the Indian situation. Rest of the paper is organized as follows: Section 1 brings out the pros and cons of the demonetization with focus on India, with analysis of different views towards it. Section 2 compares the experiences of three countries (Russia, Australia and Zimbabwe) from earlier attempts of their demonetization. Section 3 makes the summary and conclusion.

The Indian Situation

It is interesting to note that economists are widely divided in their views on demonetization of Indian Rupee notes of 500 and 1000 as announced on November 8, 2016. Don't believe it? Then consider this: "It (demonetization) undermines notes, it undermines bank accounts, and it undermines the entire economy of trust. That is the sense in which it is despotic," Amartya Sen of Harvard University and the Noble Prize winner told *NDTV; a famous Indian TV channel*. He further said his immediate point of view on demonetization is on its economic aspect. "It is (demonetization) a disaster on economy of trust. In the last 20 years, the country has been growing very fast. But it is all based on acceptance of each other's word. By taking despotic action and saying we had promised but will not fulfill our promise, you hit at the root of this," Sen, also a Bharat Ratna awardee, said.

If the above view is not convincing enough, see what Kaushik Basu, an Economic Policy Advisor to Prime Minister of India, a well-known economic researcher and Professor at Cornell University wrote in his New York Times article about this, (also see bibliography), "Demonetization may have been well-intentioned, but it was a major mistake. The government should reverse it. It could at least declare that 500 rupee notes, which many poorer people frequently use, are legal again. "

Then there is a response from the former Prime Minister of India, an astute economic watch-dog, scholar and practitioner of India's economic policy making for a span of 5 decades. Dr. Manmohan Singh, the low-key Singh who has often been referred as a mute leader, called the demonetization of high value currency notes a 'monumental mismanagement' by the government. Singh called the measure a case of organized loot and legalized plunder and warned of a major hit to the gross domestic product of the country. This scheme of demonetization, the way it has been implemented will hurt agricultural growth in our country, will hurt small industry, and will hurt all those people who are in the informal sectors of the economy. My view is that GDP growth can fall by 2 per cent and that is an underestimate," said Singh. Mind well, Dr. Singh, Dr.Basu and Dr.Sen form a monumental think tank which cannot be easily ignored.

But, then there are several equally qualified economists who have heartily supported and actively participated in implementing this. Take the cautiously optimistic position by Raghuram Rajan, an efficient economist, but a controversial RBI Governor until 2016, who said, "*It (Demonetization) is often cited as a solution. Unfortunately, my sense is the clever find ways around it. They find ways to divide up their hoard in too many smaller pieces. You do find that people, who haven't thought of a way to convert black to white, throw it into the Hundi in some temples. I think there are ways around demonetization. It is not that easy to flush out the black money. Of course, a fair amount may be in the form of gold, therefore even harder to catch. I would focus more on the incentives to generate and retain black money. A lot of the incentives are on taxes."*

So, from the above quotation we do not know if Rajan is completely behind the demonetization action or not. Then the famous critique of policies by any political party, and in the opinion of many, "The Voice of the Reason," Dr. Subramanian Swamy has initially praised and open heartedly supported demonetization as a step towards getting hold of corrupt, illegal, unaccounted money, but has become less than a full supporter as the administrative problems arose in weeks after the decision. So, we are left with a complex network of economists viewing the demonetization may or may not achieve the intended results.

Due to the surprise announcement the whole country was taken aback, great uncertainty ensued. The uneducated and the uninformed lined up outside the banks the on next day. The lower denomination –Rs 10, Rs 20, Rs 50, Rs 100 and coins –were still valid, so the rush was to convert the barred currency notes into other denominations. The government further announced that new notes of Rs 500 and Rs 2,000 would be introduced shortly, which as we know now took longer than expected. This, however, was not the first time that demonetization was done in India. Similar action was implemented twice before in 1946 and 1978.

The first currency ban: In 1946, the currency notes of Rs 1,000 and Rs 10,000 were removed from circulation. The ban really did not have much impact, as the currency of such higher denomination was not accessible to the common people. However, both the notes were reintroduced in 1954 with an additional introduction of Rs 5,000 currency. Rs 500 and Rs 1000 notes were introduced in 1934 and after four years in 1938, Rs 10,000 notes were introduced.

The second ban came in 1978; the then Prime Minister of India Mr. Morarji Desai announced the currency ban taking Rs 1000, Rs 5000 and Rs 10,000 out of circulation. The sole aim of the ban was to curb black money generation in the country.

Both bans of currency aimed to drive away black money out of circulation in the economy, both the affairs were kept confidential. Unlike Prime Minister Modi, however, Morarji Desai didn't have the backing of the RBI Governor. The then Governor of RBI, I. G. Patel believed that the ban was implemented simply to immobilize the funds of the opposition party. Patel also believed that people never stored black money in the form of currency for too long.

The ban of 1978 did not have much effect on the people and affected only the privileged few, and the recent ban has shaken the whole country. (For more information on this point, see: http://www.freepressjournal.in/featured-blog/indias-history-with-demonetisation-from-1946-to-2016/988212)

Salient Features of November 8, 2016 Announcement by Prime Minister Narendra Modi:

The Indian government's decision of *demonetization* on November 8, 2016 was a move that would put only a temporary dent in corruption, and was likely to rock the entire economy. Immediately after the announcement, many Indians had been scrambling to change their old notes, causing snake-like long queues in front of banks and desperation among the poor; many of whom had no bank account and live from cash earnings.

The main objectives of the recent demonetization were tackling counterfeit notes, curbing black money and restricting finance for subversive activities. Black money tended to intensify inequality because the biggest evasions occurred at the top of the income spectrum. It also deprived the government of money to spend on infrastructure and public services like health care and education. Black money was money that was not declared as income to the income tax authorities. It was not necessarily obtained from crime or corruption and all black income was not held in cash. Some estimates suggested that about 6 % of black income was held in cash in rupees. The rest might be in gold, property, *benami* bank accounts, foreign bank accounts etc. Similarly, all cash was not black income. Legitimate businesses dealt with large amounts of cash. Petrol pumps, white goods dealers, textile merchants and jewelers often had large cash holdings by the end of the day with many consumers paying in cash. Farmers' income could be cash but as farm income was not required to pay income tax, it was not necessarily black money. Nor is the income of the mass of the Indian population, more than 95% whose income fell below the taxable limit.

The ban would certainly hit those who were holding black money in cash such as corrupt bureaucrats, politicians, political parties, some contractors, construction companies and many more who had huge piles of cash. It was not that cash would no longer be used for corruption and storing black money, it was more likely that dollars, gold or diamonds could become more popular for such illegal purposes. Moreover, as long as agricultural income could be used as a route to avoid taxes and indirect tax rates had multiple rates and exemptions, the problem of tax evasion was unlikely to go away with this ban. According to the World Bank's most recent estimate, from 2012, Tax Revenue to GDP ratio for India is 11%, compared with about 14 % for Brazil, about 26 % for South Africa and about 35 percent for Denmark.

It was estimated that currently 86% of the cash in circulation was in the old Rs 500 and Rs 1,000 notes.

It was decided by RBI that people seeking to convert more than 250,000 rupees (about $3,650) must explain why they hold so much cash, or failing that, must pay a penalty. The requirement had already spawned a new black market to service people wishing to offload. In some cases large amount of illicit cash was broken into smaller blocks and deposited by teams of illegal couriers.

In India, there were different concepts of money supply for the formal economy (the total money in all banks) and the informal economy (the cash in circulation). Immediately after demonetization, many informal sector firms experienced a sharp decline in revenue while undergoing a continued low of expenses. The problems in the informal sector pinched the formal sector as well. The drop in biscuit sales at the local *small shop* will eventually hurt companies that supply these biscuits. If one looked at the structure of

employment in India, cash-based activities such as construction, transport, small retail and restaurants account for a big chunk of employment outside farms. The informal sector and the formal sector traded with each other. Difficulties in 40% of the economy would have an adverse impact upon the remaining 60%. (For more information on this see: http://www.nipfp.org.in/blog/2016/11/14/impact-demonetization/)

A quick look at Indian monetary statistics showed that currency with the public accounted for only 7.3% of the broad money in the economy. So, the impact on broad money was far less severe than the impact on base money. What was happening right now was a shift in the composition of broad money—from cash to bank deposits. The stock of broad money in India was more than five times the stock of base money. In other words, the money multiplier was around 5.6. This standard analytical tool in monetary economics was determined by three variables—the monetary base, the cash reserve ratio and the ratio of cash to bank deposits (C/D) in an economy. The second was a policy variable which the central bank tinkers with while the third is a behavioural variable. The C/D ratio is normally stable—but the currency reform could change it dramatically. A drop in the C/D ratio (or when people begin to hold more of their money in bank deposits rather than cash) would push up the money multiplier, as long as banks lended out the money pouring in. In other words, the behavioural shift towards bank deposits could lead to an unexpected expansion in money supply, and perhaps provide a cushion against the reduction in the monetary base(See for example:http://www.livemint.com/Opinion/ezcKeEx6iEVmqOWhEZdgdP/Currency-reform-a-risky-natural-experiment.html).

One of the intense yet fundamental debates in monetary economics was on the rather technical question of how money was created! Was it created by the central bank through the expansion of its balance sheet? Or was it created through the expansion of bank credit that the central bank then accommodated? Was money exogenous or endogenous? The ongoing natural experiment in which money was first being destroyed and then created could offer some interesting insights into this tricky issue! The 'Legality' of this demonetiation attempt was questioned by some of the lawyers in India! The notification issued by the Central Government on 8 November 2016 had been purportedly issued under Section 26(2) of the RBI Act. Government may, by notification in the Gazette of India, declar that, any series of bank notes of any denomination should cease to be legal tender. However, 'Series' in plain language could only refer to the series number on the denomination of a bank note. Going by this meaning, the government under this power could only scrap the legal tender of a series of a bank note of any denomination. If the Legislature had intended that the government was to be invested with the power to withdraw the legal status of *all* bank notes of a particular denomination, as had been done in this case, the use of the words "any series" would be entirely superfluous, and redundant.

Section 26(2) was never intended to be used as measure of dealing with the withdrawal of black money form the economy, nor was it meant to withdraw legal tender from all bank notes of a particular denomination. Previous attempts at demonetization had always followed the Ordinance route, and then by legislation. Demonetization by an "Executive Fiat" implied that the Executive had done what the Legislature had clearly never intended.

Further, Article 300 A of the Constitution states that "No person can be deprived of his/her property except by authority of law." Thus a person cannot be denied of his/her moveable and immoveable property. Demonetiation amounted to extinguishment of the public debt owed by the Government to the holder of the demonetied note. The Supreme Court in Jayantilal Shah Vs RBI AIR 1997 SC 370, while upholding the validity of the High Denomination Bank Notes (Demonetiation) Act, 1978, held that demonetiation results in extinguishment of a public debt which amounts to deprivation of property and therefore could be done only by law.

The demonetization notification, one can argue, thus appeared to be completely done without the authority of the law. The 1978 move was first created by an Ordinance and later formalized by law. If surprise was the only element to be maintained, it could clearly have been maintained through the Ordinance route. Every Ordinance had to be followed with a debate in the Parliament: reluctance of the Government to use the Ordinance route could be an indication of their reluctance to open the debate in the Parliament. (See more of this debate in India Jaisingh, National Herald, 18th Nov 2016,

http://www.nationalheraldindia.com/news/2016/11/18/demonetisationstrictly-the-pm-didnt-go-by-the-law)

The total currency in circulation as of October 28, 2016 was Rs 17.77 lakh crores. On November 9, 2016 currency in circulation suddenly declined to 14 % of the currency of the previous day.

In Fiscal Year (FY hereafter) 2017, first quarter shows 7.1% growth rate and second quarter could show around 7.6% (based on IIP and export growth numbers and a good monsoon). Economists at Ambit Capital expect a sharp "formalization" effect to start playing in 2018 wherein 40% of the informal, non-tax paying firms would exit the market, creating bigger businesses in the formal segments. Even so, they claimed that the fiscal year 2018 growth rate also stood revised downwards from 7.3% to 5.8%. Goldman Sachs though said India in fact looked "most promising" in the medium term due to "currency reforms" and stressed on the benefits of formalization, increment in Government revenue and the GST (Good and Services Tax) reform and lower exposure to external shocks. It had revised growth rate for FY 2017 downwards from 7.6% to 6.8%. Dr. Manmohan Singh (former Prime Minister of India) had indicated a reduction of 2% in the growth rate. A report by Care Ratings titled 'Impact of Demonetization on GDP Growth in FY 2017' said, the services sector was expected to be affected the most. "Importantly, these losses, due to their inherent nature, cannot be recovered in the next quarter. For rest of manufacturing, demand side issues would exist till such times that conditions stabilize and could get reversed in fourth quarter. Hence, Industry is also expected to be impacted more significantly in the first 2-3 weeks post the announcement." As per their initial estimate, overall GDP growth would be affected by 0.3-0.5%.
(http://www.forbes.com/sites/timworstall/2016/11/19/effects-of-demonetisation-on-indias-gdp-difficult-to-calculate-we-dont-even-know-the-sign/#658fdc834a1a).

Losses incurred would be recovered in the next quarter, particularly for consumer goods where there would be only deferment of purchase. Even the Small and Medium Enterprises (SMEs) in industry would have a major problem in adjusting production schedules as both payments and receipts flow in cash given their structures.

870 million of 1252 million people in India reside in rural areas. The number of "connected" internet users from rural areas to increase from 120 million in 2016 to 315 million in 2020 (30% compound growth rate). A 2016 report by Boston Consulting Group (BCG) shows that 75% of Indian transactions are cash-based as compared to 25% in Europe or the US. The move could well be an introductory course in shopping with mobile wallets, Digital transaction systems, E wallets and apps, online transactions using E banking, usage of Plastic money (Debit and Credit Cards) will be on rise gradually, which will minimise the need for cash transaction. It is expected that existing (almost 75 crores) debit and credit cards in the market, besides e-wallets, will help increase digital transactions. The Associated Chambers of Commerce of India, (ASSOCHAM) predicts the value of M-wallet transactions to be increasing from Rs. 20,000 crores in 2017 to Rs. 55 lakh crore by 2022. The penetration of online purchasing has doubled from 2015 to 2016. But prepaid recharge and payment of mobile bills are the biggest transactions reported under digital payments. This is a huge opportunity provided the infrastructure can be created.

Krishnamurty Subramaniam uses National Sample Survey Office (NSSO) data to understand the trends. First, the poor are unlikely to have substantial savings stored in Rs 500 and Rs 1,000 notes. Second, the bottom half of the population ends up spending almost their entire earnings on consumption. The bottom half—be it rural workers, daily wagers, weekly wage earners, or fortnightly wage earners—earn less than Rs 1,350 per week. In fact, even the bottom half among the urban population earns at most Rs 1, 970 per week. The amount they have to exchange will be less than the Rs 4, 000 limit that was set by the government in the first week.

Thus, people standing in the long lines may be the people from the top half of the country's income distribution, i.e. the richer folks, who want to exchange their savings for new currency; and probably some people who are acting as agents/ money mules for the dishonest.

The significant decrease in the queues after the government decided to use indelible ink to identify people that have exchanged their currency suggests large presence of the second category of people. This is not to deny the hardships of the poor. But it does provide a useful counterpoint to understand how the Jan Dhan accounts get filled up with Rs. 65000 crores.

Even the most loyal government supporter cannot ignore the hardships caused to the common man or the squeeze in business in the short run. So, can this move work? The mood in a lot of parts of the country is not yet entirely hostile. A lot hinges on the speed that currency can be provided across the length and breadth of India. Recent results of Municipal Councils show a huge BJP wave in Maharashtra. This was largely perceived to be a litmus test for the demonetization move. It also depends on how the Rs. 3 lakh crore to be extinguished from RBI accounts. It is a lot of money for infrastructure: Roads, mobile infrastructure. This can create quick employment and importantly, more assets. Distribute it off as gains to the poor through those Jan Dhan accounts. On the other hand, the swelling of Jan Dhan accounts to Rs.65000 crores is telling now that these accounts (income redistribution) will partake in the black money! While the move has created a bit of panic on ground, it has also generated an atmosphere of security for the next 10 years. Thus the move can be seen as hard economics, but excellent politics. Counterfeit notes worth Rs. 400 crores are within Indian system at any point in time; this accounts for 0.0281% and hence does not really seem worth the effort.

Cases of Russia, Australia and Zimbabwe

Just before the division of USSR states into different countries, in 1993, Russia as a solidified country had to carry out demonetization in 1991. Economic situation was in tricky phase as the decisions were made in a hurry and the impact of those decisions is visible in Table 1 below. That particular Russian case unfortunately is not any encouragement for demonetization as a panacea. Russians selected barter exchange as the better substitute as Abdelal (2003) mentions the chaos that initiated the demonetization step continued further culminating in the division of the Republic.

Table 1
Macroeconomic Data of Russia 1993-2002

Year	Exchange Rate	Money Supply	GDP	Trade Balance	CPI	Budget Interest	Deficit
Rubles per dollar (Billions of rubles for all three columns) (percent) Billions of rubles							
1992	.41	-	19	-	-	-	-
1993	1.24	23.8	172	-	874.6	-	-
1994	3.55	68.54	611	16.92	307.6	160	-69.5
1995	4.64	151.2	1540	19.81	197.4	48	-147.6
1996	5.56	192.4	2146	21.59	47.73	28	-150.4
1997	5.96	298.28	2479	14.07	14.74	60	-126.95
1998	20.65	342.81	2741	12.37	27.67	55	-56.64
1999	27.0	526.71	4767	9.07	85.68	25	173.46
2000	28.16	879.3	7306	9.5	20.75	25	275.31
2001	30.14	1192.6	9041	10.7	21.49	21	187.3
2002	31.78	1499.16	10863	13.04	15.79	24	179.22

Source: International Monetary Fund (IMF), International Financial Statistics (IFS), Yearbook, 2003.

The value of Russian Ruble has continuously declined (currently in 2017 it is 65 Rubles a dollar) since the demonetization as seen in first column. Even if the Ruble crisis intensified in 1998, the initial downward trend can be blamed on the demonetization of 1991. In the sense of stabilizing the value of the currency therefore, the demonetization has not helped the Russian republic. Major part of the declining Ruble value is also explained by the irresponsible monetary policy which has allowed the money supply in Russia to increase from 23 billion in 1993 to 1499 billion in 2002. Main message for policy makers is hidden here. If you do not want the currency to get out of hand, do not increase the money supply excessively. Unfortunately, the Indian rupee is already moving in the wrong direction as its value has declined to Rs. 68.50 for one US dollar in just 60 days after demonetization.

The growth of GDP (in nominal terms) has been impressive however for Russian case. While the GDP was only 19 billion in 1992, it has increased to 10,863 billion Rubles in 2002. Of course a large part of it is in 1999 to 2002 period, even though the early years are not that bad either. What is most impressive is the behavior of price level (CPI, column 4). It has steadily declined over these years despite the increase in money supply. One reason for this is the controlled prices by the governmental policies and has not reflected on availability of goods and services.

The oil price increase has helped Russia to show the positive balance of trade and also stabilized interest rate over these years. Budget deficit is not a worrisome problem as the tax revenues and the revenues from the oil exports as well as other exports are very high. In general, therefore the Russian case is an indication of mixed economic performance for Russia after demonetization. While the money supply has been allowed to grow excessively the currency value has declined tremendously the Russian economy has somehow tugged along after ten years of its demonetization.

If Russian economy is a case of mixed results, the Australian economy (and essentially the policy makers) has handled the scenario much better as can be seen in the following Table 2. It is remarkable that demonetization of 1996 has no effect on the value of Australian dollar; it has in fact appreciated with respect to US dollar. In 1996 the exchange rate was .79 but the value of Australian dollar increased to .56 per US dollar in 2002.

Table 2

Australia: Macroeconomic Data: 1996-2002

Year	Exchange Rate	M1	GDP	Trade Balance	CPI	Interest Rate	Budget Deficit
Figures in Australian Dollars and percentage for interest rate. For exchange rate US $ for one Australian dollar							
1996	.79	95.64	497.89	-635.0	102.6	7.2	4.80
1997	.65	108.35	526.8	1849	102.9	5.5	+2.02
1998	.61	114.79	559.3	-5332	193.7	4.99	-
1999	.65	125.83	589.3	-9730	105.3	4.78	-
2000	.55	137.62	631.6	-4699	110.0	5.9	-
2001	.51	166.94	671.18	1874	114.8	5.06	-
2002	.56	151.34	710.42	-5428	118.2	4.55	-

Source: International Monetary Fund (IMF)'s International Financial Statistics (IFS), Yearbook, 2003

The economic growth was not hampered by any means, as the nominal GDP increased from Australian $497 billion in 1996 to 710 billion in 2002. Even if trade balance fluctuated heavily in these years the inflation (as measured by CPI movement) did not get worse and the interest rate stayed very low. In general, the economic performance was encouraging for the Australian economy after demonetization of 1996. Thus, the Russian case was one of economic hardships, Australian case was quite impressive due to or despite the demonetization attempts of the respective government.

Demonetization in Zimbabwe in 2015

Zimbabwe went through hyper-inflation in 2008 following which its currency lost value. In June 2015, the Reserve Bank of Zimbabwe said the country had "adopted the multiple currency system or dollarization in 2009 and it is therefore necessary to demonetize the Zimbabwe $ unit to replace it with the multiple currency system. Demonetization was critical for policy consistency and for enhancing consumer and business confidence, its central bank had said.

According to Steve Hanke, Zimbabwe's inflation peaked at over 79 000 000 000%, that's 98% a day. That means that prices doubled every 24 hours! Zimbabwe recorded the second highest rate of inflation in history. Only Hungary in 1946 recorded a higher rate of inflation where inflation reached 4,19 x 10^{16}% or 207% per day. In the case of Hungary prices doubled every 15 hours.

According to the great economist John Maynard Keynes, "There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose." Former Russian leader Vladimir Lenin is said to have declared that the best way to destroy the capitalist system was to debauch the currency.

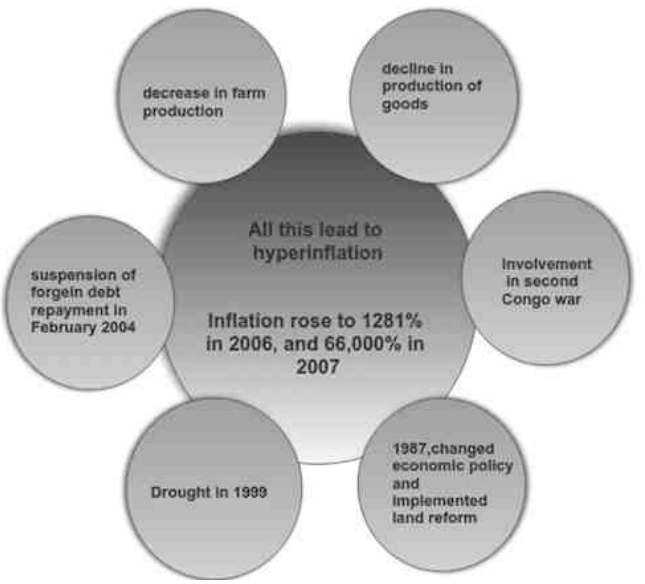
By a continuing process of inflation, a substantially major part of the wealth of citizens in a country is systematically and undetectedly taken away from them. Through this method, not only is their wealth destroyed but obliterated arbitrarily; and, while the process impoverishes the majority, it enriches a selected few.

The sight of this arbitrary re-arrangement of riches strikes not only at security but also at confidence in the equity of the existing distribution of wealth.

Hyperinflation saw the transfer of wealth in Zimbabwe. It did this in a latent way that very few people realized. Those who were smart enough to invest in properties and shares preserved the real value of their savings.

For the most part, people kept their money in savings accounts whose value was eventually destroyed by hyperinflation. Overnight people found themselves with their life savings wiped out. Demonetization spells the end of this period and heralds a new beginning for Zimbabwe. (For excellent summary on this please see: https://www.the independent.co.zw/ 2015/06/26/demonetisation-the-end-of-zim babwean-dollar/)

Factors that Led to Demonetization in Zimbabwe



Source: www.teknospire.com/static/Blog/Demonetization In India And Zimbabwe.html

The case of Zimbabwe has been unique in many different ways, however. The Zimbabwean economy from 2000 to 2014 witnessed inflation rate that created records in the world. With probably exception of World War I era in Germany, the world has not ever seen such a relentless printing of domestic currency and the extent of irresponsible monetary policy.

Summary and Conclusion:

Currency reform is a significant step in monetary policy in the true sense of the word. It is quite clear that the immediate impact on the economy will be negative. However, the massive expansion of bank deposits will hopefully bloat the

contribution of financial services to the increase in Gross Domestic Product in the third quarter of 2017 a statistical illusion that could downplay the real impact on economic growth.

The real puzzle is what this means in the long run? Much depends on whether this exogenous shock alters citizen behavior—in terms of whether less cash will be used in the future, whether the tax base will expand as more transactions are done through the formal financial system and if other policy measures restrict the creation of fresh black money.

There is a good reason why the attention of economists around the world is focused on India. This is a rare, and perhaps unprecedented, natural experiment whose deeper effects will be known well after the dust settles down. Adapting Cashless or Digital mode is the most viable solution that could prove handy in the long run. However, skeptics would question whether India is ready for this as 33% of the population is illiterate and roughly half of the population does not hold a bank account. Only time can tell whether it was a completely successful attempt or not. In fact, the lesson learned from experiences of other countries is not necessarily a very valuable lesson for India. The Russian economy did the demonetization for political reasons; Zimbabwe carried it out to get control over chaotic monetary system and Australia took that step for convenience of transactions and did it in a very efficient way. The real solution for corruption culture in India lies in attitudinal change in people's behavior. Unless and until that change arrives, there is no amount of demonetization that can completely solve the problem. In that sense the recent move is the step in right direction but the country has a long way to go.

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Overall Financial Inclusion Across 55 Countries: 12 Financial Inclusion Enabling Variables

Dr. C. Viswanatha Reddy

Abstract

The present study aims to evaluate the role of 12 financial inclusion enabling environment variables towards the overall financial inclusion across 55 countries. To examine the impact of each extracted factor on overall financial inclusion, factorial regression analysis was carried out and to highlight the impact of each individual variable on overall financial inclusion, the linear multiple regression model has been used. The empirical results show that the majority of the predictor variables studied has a significant positive effect on overall financial inclusion.

Keywords: *Financial Inclusion, Cronbach's alpha, Factor Analysis, Linear Multiple Regression Analysis.*

JEL Classification: *G18, G21, G28, O11, O57.*

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The objective of achieving universal financial access by 2020, expressed by the president of the World Bank has recognised the important role of financial inclusion for economic growth and poverty eradication throughout the world (Mohan, R. 2006). Initiatives for financial inclusion have come from the government, financial regulators and the banking industry. Many countries have initiated the legislative measures to create favourable climate for financial inclusion (Oya Pinar Ardic and Others, 2011). In the United States, the Community Reinvestemnt Act, 1997 necessitated the banks to offer credit throughout their total vicinity of operations and prohibits them from targeting only the people well-to-do. In France, the law on exclusion in 1988 emphasised that it is individuals right to have a bank account. In the United Kingdom, a "Task Force on Financial Inclusion" was consituted by the government in 2005 with a view to monitor the development of financial inclusion.

In Germany, the Bankers Association announced a voluntary code in 1996 providing bank account for every one that

facilitates basic banking transactions. In South Africa, the South African Banking Association launched a low cost bank account called "Mzansi" in 2004 for financially excluded people. In India, the Reserve Bank of India (RBI) has initiated several measures to achieve greater financial inclusion, such as facilitating 'no-frills' accounts, "General Credit Cards" for low deposit and credit, adoption of Business Correspondents model, linkage of Self-Help Groups (SHGs) with banks, etc. In Zimbabwe, the Reserve Bank of Zimbabwe has been on the forefront urging financial institutions to adopt strategies meant to promote financial inclusion. In Kenya, a product called MPESA was launched in 2007 (Central Bank Kenya, 2013). Agency banking was first developed in Brazil in 1999 and has been introduced across the world, viz., in South Africa 2005, in India 2006, in Kenya 2010 as a method of ensuring financial inclusion of unbanked population (Omwansa, T. K. and Waema, J. M. 2014).

In Asia, the poor are often served by public banks and non-bank entities, including NGOs and private sector banks. Key examples of these public banks and non-banking entities, viz., Post Savings Bank in Pakistan, Post Offices in India, Rural Development Board in Bangladesh, Bank for Agriculture and Rural Development in Vietnam, Government Savings Bank in Thailand, State Banks in Sri Lanka.

Therefore, financial inclusion is not only the requirement of developing nations, but also the developed nations (Bambuwala, S. 2013). Despite the impressive achievements, half of the worlds population is still without access to savings accounts, insurance, and other financial services (Hanning, A. and Jansen, S. 2010). According to the 2014 World Bank estimates, there are still around 2.5 billion people in the world who do not have a bank account (Mc Kay, C. 2011). Global Findex data for 2014 reveal that only around 50% of adults (people aged 15+) in the world have at least one bank account in the formal financial system. But, this percentage varies considerably between developed and developing countries (Singh, A. B. and Tandon, P. 2012).

Several variables (from micro economic point of view) matters for financial inclusion throughout the world, viz., socio-economic characteristics of households, lack of awareness and use of financial products or services (savings, credit, insurance, etc.), poverty, irregular income flows, spending habits of the people, residential status (living in urban and rural areas), gender, educational qualifications, etc. The macro-economic variables influencing the financial inclusion are - population of the country, GDP Per Capita Income, banking penetration (number of commercial bank branches and ATMs per 1 lakh adults), geographical coverage of banks, percentage of population covered by micro-insurance, borrowings from and saved at formal financial institutions by the population over 15 years of age, rates of interest on deposits and loans, availability of micro-credit and insurance, establishment of credit guarantee fund, MFIs, NBFCs, NGOs and grameen banks, payment banks, offering financial services through post offices, fair price shops, quality working days, working hours, float management, etc. Further, the financial inclusion enabling environment in each country in the world depends upon their national regulatory mechanism and policy framework.

Several technological variables are also playing key role towards financial inclusion, viz., computerization in banking; ATMs and e-depositing machines; introduction of debit and credit cards and online payment systems; internet and mobile banking; mobile cellular subscriptions; development of user friendly mobile banking applications; ePoS; Aadhaar enabled payments (in India); e-delivery channels; use of mobile technologies; liberalized KYC norms; e-DBT systems; etc. Sustainable financial inclusion also works through various channels, viz., SME financing, micro-credit financing, agricultural financing, special financing for vulnerable people, and green financing.

A dynamic financial inclusion system depends on a variety of variables encompassing diverse socio-economic conditions and feasible financial service delivery mechanism that would vary from country to country and region to region. There are no agreed variables of inclusive financial system which could facilitate comparisions across the countries and time. Therefore, there is a growing need for an in-depth research on this topic at the global level covering country studies, cross country analysis, regional studies in order to ensure consistency and accuracy in financial inclusion variables (Classens, S., Honohan, P. and Suarez, L. R. 2009).

The paper is organised as follows. Section-I talks about the financial inclusion and the literature review. Section-II provides the statement of the problem, objectives, methodology used for the study, sampling, data sources, materials and method applied for data analysis. Section-III

presents the empirical analysis of data using descriptive statistics, reliability analysis, correlation analysis, factor analysis and normality test. Section-IV deals with the linear multiple regression analysis to show the impact of the variables grouped into factors on financial inclusion. Section-V highlights the key points of discussion and the implications of the present study.

Review of Literature:

It is relevant to review the existing literature related to the several variables that are affecting the financial inclusion throughout the world. Most of the literature is focused on the definition of financial inclusion, financial inclusion trends, relationship between poverty and financial inclusion, etc. This paper has been mainly devoted to the studies related to the factors influencing the financial inclusion.

Sharma, M. and J. Pais (2008) have attempted a cross country study on factors associated with financial inclusion using financial inclusion index (Sarma, 2008) and described the broad relationship between financial inclusion and human development. The analysis made in the study show that the level of human development and financial inclusion are highly positively correlated. The study also confirms that the per capita GDP, income inequality, adult literacy, urbanization, physical and electronic connectivity and information availability, viz., road network, telephone, and internet usage play a positive role in enhancing the financial inclusion.

Martinez, C.H. and others (2013) have studied the demand factors that influence financial inclusion in Mexico using ENIF survey data and probit model. They have analysed the socio-economic factors form the point of view of individual demand, influence the decision of whether or not to use formal saving or credit financial services in Mexico. The results of the study show that the variability of income and self exclusion are the major barriers to financial inclusion in Mexico and they are influenced by three factors, viz., individual vulnerability (income level, gender, education and occupation), geographical variables (urban areas with population of less than or more than 15,000), preference for the informal financial market.

Noelia Clamara and others (2014) have examined the factors that matters for financial inclusion in Peru based on micro-data from surveys. The empirical results show that financial products, viz., loans and mortgages are the better drivers of financial inclusion than savings products. The study has identified seven barriers for financial inclusion based on the reasons for not having bank account, viz., distance, cost of financial services, documentary requirements, lack of trust on financial institutions, lack of money, religious reasons and joint use of financial services.

Radha Krishna Sharma and others (2014) have analysed the current status of demand and supply factors on financial inclusion in rural Oman using the primary data and factor analysis model. The empirical analysis shows that supply side of financial inclusion, i.e., location of ATMs, behaviour of bank staff, location of bank branches, loan processing, e-banking, government support, etc, in Oman is satisfactory. Factors that have strong influence on demand for financial inclusion are location of banks and ATMs, quality of service delivered by staff, easy access to financial services, introduction of Islamic banking products, awareness of different products among the public and easy proceesing.

A study was conducted by Islam and Ezazul (2015) to review the various issues related to financial inclusion among the countries of Asia-Pacific region using financial access survey data of IMF covering the period 2010-2015. The cross country analysis of financial inclusion indicates that there is wide variation among the countries of the region. At the country level, the factors responsible for such variation are the level of economic development, level of financial development, financial structure, and appropriate financial products and costs. At the individual level, the factors responsible are the level of education, gender, age, marital status, household size, employment, rural versus urban residence, religion and culture.

Joseph Kimutai, B. (2015) examined the factors influencing financial inclusion in rural Kenya using survey research among 113 selected sample respondents by using simple random sampling technique. The study was conducted with an objective to determine how financial education, infrastructure access, network connectivity and agent quality influence financial inclusion. The results show that the four factors, viz., financial education, infrastructure access, network connectivity, and agent quality are the significant factors ($p<0.05$) influencing the financial inclusion for rural development in Kenya.

Cyn-Young Park and Rogelio V. Mercado, Jr (2015) have conducted a study to test whether financial inclusion helps in reducing income inequality in developing Asia by constructing financial inclusion indicator for 37 sample

countries ranging large growing economies, small developing countries and transition economies. The study has tested the impact of financial inclusion on controlled variables, viz., poverty and income inequality. The empirical analysis of the study show that per capita income, rule of law, and demographic factors significantly affect financial inclusion among the countries in developing Asia. The study also shows a robust and significant correlation between higher financial inclusion and lower poverty and income inequality.

Kingstone Mutsonziwa and Obert K. Maposa (2016) have examined the impact of mobile money as a catalyst for financial inclusion in Zimbabwe using FinScope survey data. The results of the study show that 45% of the adult population use mobile money services and of those using mobile money, 65% of the people have opined that it is convenient, while 36% mentioned that it is cheap. The study also stated that in Zimbabwe, though mobile money is mostly used as a vehicle for remittances, there are still people excluded from it due to poverty issues. The authors have opined that the mobile money remains a feasible choice to move forward the scenario of financial inclusion in Zimbabwe and other upcoming economies in the world.

The most of the existing literature either focused on the factors, viz., micro and macro economic variables, demographic variables, technological factors, etc, influencing the financial inclusion in a specific country or among the countries. But, the comprehensive study explaining the relationship between the scores of financial inclusion variables and their impact on overall financial inclusion score across the countries is missing, which is the motivation for undertaking this work. Hence, the present study is a probe into the relationship between the scores of 12 financial inclusion variables and the overall financial inclusion score across 55 countries.

Statement of the Problem:

Financial inclusion is a universal developmental subject for most of the developing countries in the world, which provides the poor with superior services to have better access to credit, savings and insurance and enjoy better life. Financial inclusion, financial literacy and consumer protection are the three pillars of financial stability. Numerous variables that matters for financial inclusion throughout the world are broadly categorized into socio-economic conditions prevailing in a particular country, macro-economic variables, the country specific variables, financial service delivery channels, advancement in technologocal variables, etc. and these variables would differ from country to country. Few countries in the world are in top ranking for their financial inclusion activities and many other countries are in very bad state. This abnormality is mainly due to imbalance between supply and demand variables of financial inclusion. The supply side variables are: asymmetric information, imperfect financial markets, entry barriers to new entrants, inadequate network of banks and other financial institutions, insufficient provision of financial literacy and credit counseling, inappropriate design of products and services, etc. These issues are mostly faced by the developing countries. The demand side variables include knowledge of financial products and services, credit absorption capacity, etc. These issues are faced by both developing and developed countries (Claessens, S. 2006). A good number of research studies have been conducted on the impact of micro and macro-economic variables on financial inclusion. While many other studies have examined the influence of supply and demand variables on financial inclusion (Era Dabla-Norris, Y. J. 2015). Few other studies have also explained the impact of technological variables (non-financial) on financial inclusion. But, no research has taken place highlighting the inflence of various factors of financial inclusion on overall financial inclusion. This paper attempts to explain the relationship between the scores of 12 variables, i.e., the role of Regulatory, Supervisory and Policy Framework on financial inclusion and the overall financial inclusion scores across 55 countries.

Objectives of the Study:

Building an inclusive financial system is a challenging task on the front of researchers, policy makers, regulators and financial institutions in the developing countries and emerging markets, where banking penetration is relatively low. The present study intends to comprehend the role of 12 variables for creating an environment favourable to financial inclusion. Yet, the objectives of the study are listed below:

1. To examine the statistical reliability and consistency of sample data and the correlation coefficients between a single variable and every other variable.

2. To find out the linear combination of variables that accounts for maximum variance in financial inclusion using factor analysis.

3. To test whether the extracted factors (using principal component method) are significantly affecting the overall financial inclusion.

4. To check the extent to which the individual variables of financial are affecting the overall financial inclusion.

Research Methodology:

Research Design:

In view of the objectives of the study listed above, an exploratory research design and causal research method has been adopted. Exploratory research is one which interprets the already available information and it lays particular emphasis on the analysis and interpretation of the available secondary data. Causal research method is used to quantify the effect of the independent financial inclusion on the overall financial inclusion.

Sample Frame:

There are 195 countries in the world. This total comprises 193 countries that are member states of the United Nations (UN) and 2 countries that are non-member observer states. Out of such countries, 55 countries (*12 countries from the East and South Asian Region,* viz., Bangladesh, Cambodia, China, India, Indonesia, Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; *5 countries from Eastern European and Central Asian Region,* viz., Bosnia and Herzegovina, Kyrgyz Republic, Russia, Tajikistan, Turkey; *21 countries from Latin America and Caribbean Region,* viz., Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, Venezuela; *4 countries from Middle East Region,* viz., Egypt, Jordan, Lebanon, Morocco; and *13 countries from Sub-Saharan African Region,* viz., Cameroon, Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Madagascar, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda) have been chosen for the study by adopting convenient sampling.

Sources of Data:

The data (the scores of 12 policy dimensions for creating an inclusion-friendly environment, viz., regulatory, supervisory and institutional framework and overall financial inclusion scores across 55 countries) required for the study has been collected from the published secondary source, viz., the annual reports of the 'The Global Microscope – The Economist Intelligence Unit (EIU)'.

Hypothesis:

H_{01}:$\beta_1 = \beta_2 =$ ----- $= \beta_k = 0$, shows no linear relationship between X_i and Y. The predictors extracted (Extracted Factors) are not the significant indicators of overall financial inclusion.

H_{02}:$\beta_1 = \beta_2 =$ ----- $= \beta_k = 0$, shows no linear relationship between X_i and Y. The predictors (individual variables) are not the significant indicators of overall financial inclusion.

Methods for Analysis of Data:

Coakes, J. C. and Ong, C. (2011) said that the reliability analysis is used to determine the internal consistency of the data using Cronbach's Alpha. The formula for the calculation of Cronbach's Alpha as suggested by Fraenke l, J. R. and Wallen, N. E. (1996):

$$r_{kk} = \left(\frac{k}{k-1}\right) * \left(1 - \frac{S_i^2}{S_x^2}\right) \text{ ---- } (1)$$

r_{kk} = estimated Cronbach's Alpha coefficient value;

k = the number of items in the questionnaire;

S_i^2 = sum of item variances; and 2

S_x^2 = factor variances.

Chua, Y. P. (2009) said that factor analysis is the procedure used to organise, identify and minimize big items from the questionnaire to certain constructs under one dependent variable in a research. KMO test was done to identify whether the data is suitable for factor analysis. The KMO test formula as stated by Norusis, M. J. (1994) is:

$$KMO = \frac{\sum_{j=1}^{n}\sum_{i=1}^{n} r_{ij}^2}{\sum_{j=1}^{n}\sum_{i=1}^{n} r_{ij}^2 + \sum_{j=1}^{n}\sum_{i=1}^{n} a_{ij}^2} \text{ ---- } (2)$$

r_{ij}^2 = Correlation Coefficient; and

a_{ij}^2 = Partial Correlation Coefficient.

Wichern, R. A. (2002) stated that factor analysis is an attempt to find a set of hidden factors such that the currently observed variables are recovered by performing a set of linear transformations on these factors. Mathematically, given the set of observed variables $x_1, x_2, \ldots x_p$, factor analysis attempts to find the set of factors, $f_1, f_2, \ldots f_m$, such that:

$$x_1 - \mu_1 = l_{11}f_1 + l_{12}f_2 + \text{----} + l_{1m}f_m + e_1$$
$$x_2 - \mu_2 = l_{21}f_1 + l_{22}f_2 + \text{----} + l_{2m}f_m + e_2$$
$$\vdots$$
$$x_p - \mu_p = l_{p1}f_1 + l_{p2}f_2 + \text{----} + l_{pm}f_m + e_m \quad \text{-----} (3)$$

Here, $\mu_1, \mu_2, \ldots, \mu_p$ = means of the variables $x_1, x_2, \ldots, x_p$; $e_1, e_2, \ldots$ = the unobservable part of variables $x_1, x_2, \ldots$,(also called specific factors); l_{ij}, = Loadings of the i^{th} variable on j^{th} factor (*where i=1 to p; j=1 to m)* ; and the factors $f_1, f_2, f_3, \ldots$, f_m are known as common factors.

Johnson and Wichern also estimated the communalities

$$\tilde{h}_i^2 = \tilde{l}_{i1}^2 + \tilde{l}_{i2}^2 + \text{----} + \tilde{l}_{im}^2 \text{------} (4)$$

The principal component factor analysis of the sample covariance matrix 'S' is specified in terms of its eigenvalue – eigenvector pairs $(\hat{\lambda}_1, \hat{e}_1), (\hat{\lambda}_2, \hat{e}_2), \ldots, (\hat{\lambda}_p, \hat{e}_p)$, were $(\hat{\lambda}_1 \geq \hat{\lambda}_2 \geq \ldots \geq \hat{\lambda}_p)$. Let $m<p$ is the number of common factors. Then the matrix of estimated factor loadings ()*ijl*~ is given by:

$$\tilde{L} = \left(\sqrt{\hat{\lambda}_1}\,\hat{e}_1 \vdots \sqrt{\hat{\lambda}_2}\,\hat{e}_2 \vdots \ldots \vdots \sqrt{\hat{\lambda}_m}\,\hat{e}_m\right) \text{-----} (5)$$

Shapiro, S. S. and Wilk, M. B. (1965) test calculates a '*W*' statistic that tests whether a random sample, $x_1, x_2, \text{----}, x_n$ comes from a normal distribution. Small values of '*W*' are evidence of departure from normality. The '*W*' statistic is calculated as:

$$W = \frac{\left(\sum_{i-1}^{n} a_i\, x_{(i)}\right)^2}{\sum_{i-1}^{n}\left(x_i - \bar{x}\right)^2} \text{------} (6)$$

Where the $x_{(i)}$ are the ordered sample values ($x_{(1)}$ is the smallest) and the a_i are the constants generated from the means, variances and co-variance of the order statistics of a sample size '*n*' from a normal distribution.

In multiple regression analysis models, we fit relationship between *'k'* explanatory variables denoted as $X_1, X_2, \ldots X_k$ and one response variable '*Y*'. The linear relationship of *Y* as a function of $X_1, X_2, \ldots X_k$ can be written as:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \text{----} + \beta_k X_k + error \text{ ------} (7)$$

In this model, α is the intercept term and $\beta_1, \beta_2, \ldots \beta_k$ are called regression coefficients. In order to fit this model, we need to estimate the regression coefficients $\alpha, \beta_1, \beta_2, \ldots \beta_k$ by using the method of least squares. The size of the coefficient for each independent variable gives the size of the effect that variable is having on the dependent variable and the sign of the coefficient (positive or negative) gives the direction of the effect.

The value of R^2 refers to the proportion of variance in the dependent variable that can be explained by the independent variable. The explanatory power of the model increases with higher value of R^2. The value of R^2 is high when there are more explanatory variables in the model. Hence, the value of R^2 may be misleading in multiple linear regression models. Therefore, an adjusted R^2 will be considered. Adjusted R^2 increases only if the added explanatory variable contributes in explaining the variation in response variable *Y*.

The standard error of the estimate measures the variability of predictions in a regression. It is calculated by using the following formula:

$$\text{Standard error of the Estimate} = \sqrt{\frac{\sum (Y - \hat{Y})^2}{N}} \text{ ------- } (8)$$

Where *Y* is a score in the sample and *Y^*is the predicted score.

If the standard error of the estimate is small, then we observe that the most of the observed values fall fairly closely to the regression line and vice-versa.

In case of multiple linear regression analysis, *F-test* can be used to test the overall validity of the model or to test if any of the explanatory variables (Kothari, C. R. 2004) are having linear relationship with the response variable. The hypotheses are: H_0: $\beta_1 = \beta_2 = \text{----} = \beta_k = 0$, shows all slopes are equal to zero. Thus none of the X_i is linearly related to *Y*. If the *p*-value (significance) for the *F*-test statistic is less than

0.05, then there would be strong evidence against null hypothesis.

In multiple linear regression analysis, *t*-test checks the hypothesis for individual explanatory variables. The hypothesis statement to test the significance of a particular regression coefficient, βi, is: H_0: $\beta_i = 0$, *i.e.,* no linear relationship between X_i and *Y.* If the significance value ($p<0.05$) of a predictor variable is less than 0.05, then the predictor variable in the model is significant.

Multicollinearity is a situation of very high inter-correlations among the predictor variables. If the multicollinearity is present in the data, then the statistical inferences drawn about the data may not be reliable. Multicollinearity can be detected with the help of *tolerance* and its reciprocal, called as *Variance Inflation Factor* (*VIF*). If the value of tolerance is less than 0.2 or 0.1 and, simultaneously, the value of VIF 10 and above, then the multicollinearity is problematic.

Multicollinearity generated by variable X_i is measured by variance inflation factor given by:

$$VIF_i = \frac{1}{1-R_i^2} \text{ ------ } (9)$$

Here, R_x^2 is the coefficient of determination of the linear regression model that uses X_i as the response variable and all other X variables as the explanatory variables.

II. Empirical Analysis of Data:

Descriptive Statistics:

The table No.1 shows the descriptive statistics, viz., mean and standard deviation. Looking at the mean value of different variables, it can be concluded that Regulation and supervision of deposit taking activities is the most important variable (the mean score is 69.78) that contributes towards financial inclusion, followed by the Regulation and supervision of branches and agents (mean score is 68.55), Prudential Regulations (mean score of 68.16), Credit reporting systems (mean score 64.11). The least important variable that works very less for financial inclusion is the Regulation of Insurance targeting low income populations with the mean score of 33.95. As far as standard deviation is concerned, the prudential regulations are showing more consistency (standard deviation is 18.781), followed by regulation and supervision of deposit taking activities (standard deviation is 21.013), regulation and supervision of credit portfolios (standard deviation is 21.248), etc.

Table No.1
Descriptive Statistics

Factor	Mean	Std. Deviation	Analysis N
1. Government Support for Financial Inclusion	44.73	29.729	55
2. Regulatory and Supervisory Capacity for Financial Inclusion	46.93	21.725	55
3. Prudential Regulation	68.16	18.781	55
4. Regulation and Supervision of Credit Portfolios.	60.65	21.248	55
5. Regulation and Supervision of Deposit Taking Activities.	69.78	21.013	55
6. Regulation of Insurance Targeting Low Income populations	33.95	29.308	55
7. Regulation and Supervision of Branches and Agents.	68.55	25.086	55
8. Requirements for Non-Regulated Lenders.	46.93	26.104	55
9. Electronic Payments	55.45	23.907	55
10. Credit Reporting Systems	64.11	27.244	55
11. Market Conduct Rules.	44.11	27.328	55
12. Grievance Redress and Operation of Dispute -Resolution Mechanism.	46.93	30.715	55

Source: Authors calculation using SPSS.21.

Reliability Analysis:

The reliability and consistency of the data compiled from the Annual Report, 2015 of the Economist Intelligence Unit Limited, has been examined through reliability test with, Cronbach's Alpha as a coefficient of internal consistency. The Cronbach's Alpha value for the sample data is found to be 0.785 for 12 factors. As per the ranges provided by George, D. J. Mallery, P. (2003), Cronbach's Alpha value greater than or equal to 0.5 is considered to be acceptable. Indeed the value of Cronbach's Alpha 0.785 shows that there is an acceptable internal consistency in the items taken for study.

Table No.2
Reliability Analysis

Cronbach's Alpha	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.641
.785	Bartlett's Test of Sphericity	Approx. Chi-Square	211.911
No. of Items		degrees of freedom	66
12		Sig.	.000

Source: Authors calculation using SPSS.21.

Further, Bartlett's Test of Sphericity and KMO Measure of Sampling Adequacy were performed to confirm the suitability of the data for factor analysis. The result of the KMO measure of sampling adequacy is 0.641, which exceeds the minimum value of 0.5, while the Bartlett's test of sphericity indicates a significance level of 0.00. Both the KMO and Bartlett's test of sphericity are found to be significant for this study. Therefore, it is appropriate to proceed with factor analysis to examine the factors affecting the financial inclusion.

Correlation Analysis:

A correlation matrix is simply a rectangular array of numbers which gives the correlation coefficients between a single variable and every other variable in the investigation. The correlation coefficient between a variable and itself is always 1; hence the principal diagonal of the correlation matrix contains 1s. The correlation coefficients above and below the principal diagonal are the same. The determinant of the correlation matrix is shown at the foot of the table below.

Table No.3
Correlation Matrix

		Var_1	Var_2	Var_3	Var_4	Var_5	Var_6	Var_7	Var_8	Var_9	Var_10	Var_11	Var_12
Correlation	Var_1	1.000											
	Var_2	.581	1.000										
	Var_3	.309	.315	1.000									
	Var_4	.321	.417	.235	1.000								
	Var_5	.075	.110	.196	.111	1.000							
	Var_6	.399	.380	.052	.280	-.185	1.000						
	Var_7	.375	.412	.236	.193	-.364	.361	1.000					
	Var_8	-.030	.125	.319	.168	.161	.063	.063	1.000				
	Var_9	.248	.253	.207	.235	.034	.226	.118	.051	1.000			
	Var_10	.208	.148	.409	.253	.295	.161	.191	.238	.347	1.000		
	Var_11	.410	.221	.245	.329	.356	.342	.234	.027	.204	.413	1.000	
	Var_12	.293	.243	.217	.320	.163	.431	.173	-.055	.367	.317	.776	1.000
Sig. (1-tailed)	Var_1												
	Var_2	.000											
	Var_3	.011	.010										
	Var_4	.008	.001	.042									
	Var_5	.294	.212	.076	.210								
	Var_6	.001	.002	.354	.019	.088							
	Var_7	.002	.001	.041	.079	.003	.003						
	Var_8	.413	.181	.009	.111	.121	.325	.324					
	Var_9	.034	.031	.064	.042	.403	.049	.195	.356				
	Var_10	.064	.141	.001	.031	.015	.120	.082	.040	.005			
	Var_11	.001	.053	.036	.007	.004	.005	.043	.422	.068	.001		
	Var_12	.015	.037	.056	.009	.117	.001	.103	.346	.003	.009	.000	

Determinant = .013

Source: Authors calculation using SPSS.21.

The above correlation matrix shows how each of the 12 items are associated with each of the other 11 items. Relatively high correlations between any two items indicate that they are strongly associated and will probably be grouped together by the factor analysis. Items with low correlations usually will not have high loadings on the same factor. Most of the correlations are well above 0.3, which is a good indication that factor analysis yield good results. One assumption is that the determinant (located at the bottom of the correlation matrix) should be more than 0.001. Here, it is 0.013 so this assumption is met. If the determinant is zero, then a factor analytic solution cannot be obtained, because this would require dividing by zero, which would mean that at least one of the items can be understood as a linear combination of some set of the other items.

Factor Analysis:

In this study, the factors have been extracted through the principal components factor analysis method, as this method partitions the total variance of all original variables by finding the first linear combination of variables that accounts for the maximum variance. The communalities represent the amount of systematic variation for each variable that is accounted for by the set of factors in a study and the value ranges from 0 to 1. According to Zillmer, E. A. J. and Vuz, J. K. (1995) communalities with a value below 0.30 suggest that few variables are associated and thus a suitable factor model may not emerge. Therefore, such values need to be removed from the scale. In this study (as shown in table No.4) only one value in the communalities is below 0.30, the variable corresponding to it is removed (*i.e.,* Electronic Payments). The remaining values for the communalities are above 0.30, thus indicating that the variables provide a sufficient explanation for the factor solution. For instance, 79% of variance is explained by "Grievance Redress and Operation of Dispute-Resolution Mechanism," 78% of the variance is explained by "Market Conduct Rules", 69% of the variance is explained by "Regulation and Supervision of Deposit Taking Activities" and 63.5% of the variance is explained by Regulation and Supervision of Branches and Agents."

Table No.4
Communalities

Loaded Items	Initial	Extraction
Government Support for Financial Inclusion.	1.000	.534
Regulatory and Supervisory Capacity for Financial Inclusion.	1.000	.575
Prudential Regulation.	1.000	.587
Regulation and Supervision of Credit Portfolios.	1.000	.364
Regulation and Supervision of Deposit Taking Activities.	1.000	.691
Regulation of Insurance Targeting Low Income populations .	1.000	.562
Regulation and Supervision of Branches and Agents.	1.000	.635
Requirements for Non-Regulated Lenders.	1.000	.575
Electronic Payments.	1.000	.256
Credit Reporting Systems.	1.000	.515
Market Conduct Rules.	1.000	.788
Grievance Redress and Operation of Dispute-Resolution Mechanism.	1.000	.791

Extraction Method: Principal Component Analysis.

Source: Authors calculation using SPSS.21.

Table No.5 displays the total variance explained at three stages for factors that are affecting the overall financial inclusion of the select 55 countries. Three factors were extracted as their Eigen values are greater than 1. When three factors were extracted, then 60.679 per cent of the variance would be explained.

Table No.5
Factors Extracted through Principal Component Analysis

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.595	32.679	32.679	3.595	32.679	32.679	2.498	22.706	22.706
2	1.718	15.614	48.294	1.718	15.614	48.294	2.337	21.247	43.953
3	1.362	12.385	60.679	1.362	12.385	60.679	1.840	16.726	60.679

Extraction Method: Principal Component Analysis

Source: Authors calculation using SPSS.21.

Table No.6 shows the rotated factor matrix for the data. As said by Tabachnick, B. G. and Fidell, L. S. (2001) the variables with factor loadings equal to 0.45 are considered average, where as loadings 0.32 are considered less good. After performing Varimax Rotation Method with Kaiser Normalization, Factor 1 comprised five items with factor loadings ranging from 0.399 to 0.795. Factor 2 comprised of three items with factor loadings ranging from 0.530 to 0.881. Factor 3 comprised three items with factor loadings ranging from 0.544 to 0.741.

Table No.6
Factor Loadings after Varimax Rotation

Loaded Items	Factor Loadings		
	1	2	3
1. Government Support for Financial Inclusion.	**.639**		
2. Regulatory and Supervisory Capacity for Financial Inclusion.	**.670**		
3. Prudential Regulations.			**.719**
4. Regulation and Supervision of Credit Portfolios.	**.399**		
5. Regulation and Supervision of Deposit Taking Activities.		**.530**	
6. Regulation of Insurance Targeting Low Income populations	**.675**		
7. Regulation and Supervision of Branches and Agents.	**.795**		
8. Requirements for Non-Regulated Lenders.			**.741**
9. Credit Reporting Systems			**.544**
10. Market Conduct Rules.		**.881**	
11. Grievance Redress and Operation of Dispute-Resolution Mechanism.		**.840**	

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

Rotation converged in 6 iterations.

Source: Authors calculation using SPSS.21.

Varimax rotation is an orthogonal rotation which is commonly used, as it tries to maximise the variance of each of the factors in such a way that the total amount of variance accounted for is redistributed over the three extracted factors. The three factors extracted have been renamed as "Government Support and Regulation of Financial Inclusion Activities (X_1)," "Capacity towards Marketing, Offering Deposit Products and Grievance Redressal (X_2)," and "Regulation and Supervision of New Entrants and Non-Regulated Lenders (X_3)." Table No.7 exhibits the factor loadings of the four extracted factors after varimax rotation. The first factor "X_1" shows the highest percentage of variance (32.679%) explained when it was extracted. When the second factor "X_2" was extracted, then 15.614% of the variance would be explained. Further, when the third factor "X_3" was extracted, then 12.385% of the variance would be explained.

Table No.7
Names of New Factors with the Percentage of Variance Explained

Name of the New Factor	Loaded Items	Factor Loadings			% of Variance
		1	2	3	
Government Support and Regulation of Financial Inclusion Activities (X_1).	Government Support for Financial Inclusion (X_{11}).	**.639**			32.679
	Regulatory and Supervisory Capacity for Financial Inclusion (X_{12}).	**.670**			
	Regulation and Supervision of Credit Portfolios (X_{13}).	**.399**			
	Regulation of Insurance Targeting Low Income populations (X_{14}).	**.675**			
	Regulation and Supervision of Branches and Agents (X_{15}).	**.795**			
Capacity towards Marketing, Offering Deposit Products and Grievance Redressal (X_2).	Regulation and Supervision of Deposit Taking Activities (X_{21}).		**.530**		15.614
	Market Conduct Rules (X_{22}).		**.881**		
	Grievance Redress and Operation of Dispute-Resolution Mechanism (X_{23}).		**.840**		
Regulation and Supervision of New Entrants and Non-Regulated Lenders (X_3).	Prudential Regulations (X_{31}).			**.719**	12.385
	Requirements for Non-Regulated Lenders (X_{32}).			**.741**	
	Credit Reporting Systems (X_{33}).			**.544**	

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 6 iterations.
Source: Authors calculation using SPSS.21.

Normality Test:

The three new factors that are affecting the overall financial inclusion among the select 55 countries were tested using the normality test. Here, two tests for normality are run. For data set smaller than 2,000 elements, we use the Shapiro-Wilk test; otherwise, the Kolmogorov-Smirnov test is used. In the present case, since we have only 55 elements, the Shapiro-Wilk test is used. Table No.8 shows the results of the normality test for the three new factors that are affecting overall financial inclusion. When the significant p-value for the variable is bigger than 0.05 ($p>0.05$), then the data is normal. The tests of normality results using the Shapiro-Wilk test showed that the normality assumption for three factors fulfil the normality assumption ($p>0.05$). Hence, it can be concluded that the data has come from a normal distribution.

Table No.8
Normality Test for the New Factors

Factors	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Government Support and Regulation of Financial Inclusion Activities (X_1).	.096	55	.200*	.980	55	.482
Capacity towards Marketing, Offering Deposit Products and Grievance Redressal (X_2).	.101	55	.200*	.971	55	.204
Regulation and Supervision of New Entrants and Non-Regulated Lenders (X_3).	.078	55	.200*	.981	55	.542

*This is a lower bound of the true significance.
a. Lilliefors Significance Correction
Source: Authors calculation using SPSS.21.

Linear Multiple Regression Analysis:

Regression analysis is a statistical process which is used for estimating the relationships among variables in a study. In order to examine the extent to which the three extracted factors affect the overall financial inclusion among the select 55 countries, the data is further utilized in regression for validation. All the three extracted factors, viz., X_1, X_2, X_3 are found to be significant for overall financial inclusion and considered as predictors of the criterion variable, i.e., overall financial inclusion.

Table No.9
Model Summary and ANOVA for Extracted Factors

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F Value	Sig.
1	.973	.947	.944	3.291	306.782	.000*

*Notes: Predictors: (Constant), * p <0.05*
Source: Authors calculation using SPSS.21.

The model summary in Table No.9 depicts that the value of R^2 is 0.947, which indicates that 94.7% of the variance in dependent variable (i.e., overall financial inclusion score) is explained by the predictor variables, viz., X_1, X_2, X_3. The adjusted R^2 is an adjustment of the R^2 that penalizes the addition of extraneous predictors to the model and indicates the fitness of a model. In this model the value of adjusted R^2 is 0.944, which is close to the value of R^2 (0.947), thus indicating the fitness of the model. The value of F is 306.782 with a significance level of p<0.001, which indicates that the model is statistically significant.

The regression coefficients in table No.10 illustrate a range of un-standardized and standardized coefficients. The un-standardized coefficients indicate that how much the dependent variable goes up, on an average, given that the dependent variable goes up one unit. Similarly, the standardized coefficients estimates resulting from an analysis carried out on dependent variables have been standardized (beta) so that their variances are 1. Therefore, standardized coefficients refer to how many standard deviations; a dependent variable will change, per unit standard deviation increase in the independent variable.

Table No.10
The Regression Coefficients for Extracted Factors

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-3.769	1.840		-2.049	.046		
	Government Support and Regulation of Financial Inclusion Activities (X_1).	.467	.027	.602	17.123	.000*	.833	1.201
	Capacity towards Marketing, Offering Deposit Products and Grievance Redressal (X_2).	.224	.023	.340	9.547	.000*	.811	1.233
	Regulation and Supervision of New Entrants and Non-Regulated Lenders (X_3).	.270	.027	.344	9.916	.000*	.853	1.172

Dependent Variable: Overall Financial Inclusion Score .
**Statistically significant (p<0.05).*
Source: Authors calculation using SPSS.21.

In table No.10 the highest beta coefficient is 0.467 for the extracted factor "$X_{1,}$" followed by 0.270 for the extracted factor "$X_{3,}$" and 0.224 for the extracted factor "$X_{2.}$" The t-value for the significance of each of the three predictors indicates significance at 0.000 levels. In the collinearity statistics, the tolerance level is less than 1 and VIF level is higher than 1 (but not more than 2.0), indicates that there is no multicollinearity. On the basis of the results, we can conclude that the predictors extracted (Extracted Factors) are significant indicators of overall financial inclusion of the select 55 countries in the world. The resulting multiple regression equation is as follows:

$$\hat{Y} = -3.769 + 0.467\,X_1 + 0.224\,X_2 + 0.270\,X_3$$

$\hat{Y}$ = Overall Financial Inclusion.

With a view to highlighting the importance of each variable (the variables grouped in each extracted factor) on overall financial inclusion, multiple regression equation models have been developed.

Table No. 11 (a)
The Regression Coefficients for the Variables of Factor -1 (X_1)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	15.114	4.117		3.671	.001		
	Government Support for Financial Inclusion (X_{11}).	.130	.047	.277	2.784	.008*	.611	1.637
	Regulatory and Supervisory Capacity for Financial Inclusion (X_{12}).	.181	.067	.282	2.710	.009*	.561	1.783
	Regulation and Supervision of Credit Portfolios (X_{13}).	.169	.057	.257	2.961	.005*	.804	1.244
	Regulation of Insurance Targeting Low Income populations (X_{14}).	.106	.042	.222	2.489	.016*	.760	1.315
	Regulation and Supervision of Branches and Agents (X_{15}).	.071	.049	.128	1.444	.155#	.767	1.304

Dependent Variable: Overall Financial Inclusion Score
*Statistically significant ($p<0.05$); # Statistically not significant ($p>0.05$)
Source: Authors calculation using SPSS.21.

In table No.11 (a) the highest beta coefficient is 0.181 for the variable "$X_{12,}$" followed by 0.169 for "$X_{13,}$" 0.130 for "$X_{11,}$" 0.106 for "$X_{14,}$" and 0.071 for "$X_{15,}$" The t-value for the significance of the first four predictor variables in the model is significant and of the fifth factor is insignificant. In the collinearity statistics, the tolerance level is less than 1 and VIF level is higher than 1 (but not more than 2.0), which indicates that there is no multi-collinearity. On the basis of the results, we can conclude that the predictor variables (variables grouped in Factor-1), except the fifth factor (X_{15}), are significant indicators of overall financial inclusion of the select 55 countries in the world. The resulting multiple regression equation is as follows:

$$\hat{Y} = 15.114 + 0.130X_{11} + 0.181X_{12} + 0.169X_{13} + 0.106X_{14} + 0.071X_{15}$$

$\hat{Y}$ = Overall Financial Inclusion.

Table No. 11(b)
The Regression Coefficients for the Variables of Factor -2 (X_2)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	29.065	5.158		5.635	.000		
	Regulation and Supervision of Deposit Taking Activities (X_{21}).	.052	.073	.078	.709	.482#	.841	1.189
	Market Conduct Rules (X_{22}).	.188	.088	.368	2.130	.038*	.344	2.905
	Grievance Redress and Operation of Dispute-Resolution Mechanism (X_{23}).	.152	.074	.335	2.047	.046*	.384	2.606

Dependent Variable: Overall Financial Inclusion Score.
*Statistically significant ($p<0.05$); #Statistically not significant ($p>0.05$).
Source: Authors calculation using SPSS.21.

In table No.11 (b) the highest beta coefficient is 0.188 for the variable "$X_{22,}$" followed by 0.152 for "$X_{23,}$" and 0.052 for "$X_{21.}$" The t-value for the significance of the first predictor variable (X_{21}) in the model is not significant and the second and third variables are significant. In the collinearity statistics, the tolerance level is less than 1 and VIF level is higher than 1 (but not more than 2.0), which indicates that there is no multi-collinearity. On the basis of the results, we can conclude that the first predictor variable is not a significant indicator and the second and third predictor variables are significant indicators of overall financial inclusion of the select 55 countries in the world. The resulting multiple regression equation is as follows:

$$\hat{Y} = 29.065 + 0.052\,X_{21} + 0.188\,X_{22} + 0.152\,X_{23}$$

$\hat{Y}$ = Overall Financial Inclusion.

Table No.11(c)
The Regression Coefficients for the Variables of Factor-3 (X_3)

Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
1	(Constant)	14.282	5.646		2.529	.015		
	Prudential Regulation (X_{31}).	.270	.087	.363	3.111	.003*	.781	1.281
	Requirements for Non-Regulated Lenders (X_{32}).	.053	.059	.098	.895	.375#	.884	1.131
	Credit Reporting Systems (X_{33})	.203	.058	.396	3.473	.001*	.820	1.220

Dependent Variable: Overall Financial Inclusion Score.
*Statistically significant ($p<0.05$); #Statistically not significant ($p>0.05$).
Source: Authors calculation using SPSS.21.

In table No.11(c) the highest beta coefficient is 0.270 for the variable "$X_{31,}$" followed by 0.203 for "$X_{33,}$" and 0.053 for "$X_{32.}$" The t-value for the significance of the first and third predictor variables in the model is significant and the second predictor variable is not significant. In the collinearity statistics, the tolerance level is less than 1 and VIF level is higher than 1 (but not more than 2.0), which indicates that there no multi-collinearity. On the basis of the results, we can conclude that the first and third predictor variables (variables grouped in Factor-3) are significant indicators and the second predictor variable is not significant of the overall financial inclusion of the select 55 countries in the world. The resulting multiple regression equation is as follows:

$$\hat{Y} = 14.282 + 0.270\,X_{31} + 0.053\,X_{32} + 0.203\,X_{33}$$

$\hat{Y}$ = Overall Financial Inclusion

Discussion:

The study has examined the relationship between the scores of 12 variables of financial inclusion and their influence on overall financial inclusion score across 55 countries. Cronbach's Alpha was used to test the coefficient of internal consistency of all the items. Since all the items were found to be highly reliable for conduction of the study, factor analysis was used for data reduction procedure. Through factor analysis, three major factors of financial inclusion were extracted which influenced the overall financial inclusion significantly, viz., "Government Support and Regulation of Financial Inclusion Activities," "Capacity towards Marketing, Offering Deposit Products and Grievance Redressal," and "Regulation and Supervision of New Entrants and Non-Regulated Lenders." Based on the extracted factors, factorial regression analysis was carried out. The regression analysis illustrated that the three extracted factors are positively related to the overall financial inclusion. The hypothesis one (H_{01}) was supported by all the three extracted factors of financial inclusion. With a view to highlight the importance of each variable (the variables grouped in each extracted factor) on overall financial inclusion, multiple regression equation models have been developed. The analysis has revealed that all the variables are positively related to the overall financial inclusion. Hence, the hypothesis two (H_{02}) was supported by all the studied variables of financial inclusion.

The purpose of this study was to highlight the various dimensions of government support and regulation; capacity towards marketing, offering deposit products and grievance redressal; and regulation and supervision new entrants and non-regulated lenders towards financial inclusion are significantly related to overall financial inclusion performance across 55 countries. Consistent with prior literature reviews, the author has identified that the majority of the variables studied have a significant positive effect on overall financial inclusion performance. From this study, it can be inferred that the factors mentioned above play a pivotal role in influencing the overall financial inclusion performance across the countries and therefore it is of utmost importance that the remaining countries in the world should realise the effect of these factors while formulating their financial inclusion policies and strategies.

Implications of the Study:

The study has focused on the analysis of various factors of financial inclusion by examining the impact of each factor on the overall financial inclusion performance among the select 55 countries in the world. The results obtained from this study has got practical implications for the other countries interested to focus on parameters of financial inclusion, to create financial inclusion atmosphere, and to propel their overall financial inclusion performance. The findings of the study have revealed that few factors, viz., "Government Support for Financial Inclusion," "Regulatory and Supervisory Capacity for Financial Inclusion," "Regulation and Supervision of Credit Portfolios" "Regulation of Insurance Targeting Low Income populations," "Market Conduct Rules," "Grievance Redress and Operation of Dispute-Resolution Mechanism," "Prudential Regulation," and "Credit Reporting Systems" are highly significant for overall financial inclusion performance. From the findings of the study, we can also infer that the above said factors provide significant contribution towards overall financial inclusion among the select countries, therefore creating an opportunity for the countries to develop consequential strategies to empower the financial inclusion concept. Further, it would be a lesson to left over countries in the world that they should realise the significant effect of the above said factors on overall financial inclusion performance while devising their policies and strategies towards this direction.

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Robustness of CAPM : Fama-French Three-Factor Model

Samreen Akhtar

Abstract

This study empirically re-examines the single-factor market model and the Fama-French three-factor model for the Indian stock market using data for a longer time-period i.e. from 1993 to 2013. To check the robustness of the models, the tests are carried out for seven different time periods. The results report a negative relation between size and average return, and a positive relation between average return and value irrespective of size. R^2 values establish that the stock-market returns, SMB and HML proxy for risk factors. The results suggest the Fama-French factors are not adequately priced and they leave abnormal returns to the portfolios. A joint test of the intercepts also confirms the results, so, the model stands rejected for the Indian stock market.

Keywords: *Asset Pricing, CAPM, Fama-French three-factor model, size effect, Value effect*

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The motive behind any investment is to maximize return generated by an asset/portfolio for a given level of risk or to minimize risk for a given level of return. This concern of investors (risk-return trade-off) has led to the development of asset pricing models. The classical and the most extensively used is the CAPM (Capital Asset Pricing Model) developed by William Sharpe (1964), John Lintner (1965) independently. But soon this model started losing its grounds because of the anomalies which emerged from many empirical works done in various stock markets across the world. Some of the most prominent CAPM anomalies are the size effect documented by Banz (1981), the value effect recorded by Chan et al. (1991), and the price to earnings ratio effect documented by Basu (1977). This led researchers to look for other factors to explain the cross-section of stock returns. Fama and French (1992, 1993, 1995, and 1996) attributed the failure of this model to non-diversifiable risk, which is not captured by the standard CAPM. To capture this risk and the pricing anomalies, Fama and French (1992) proposed the three-factor model, by adding size and book-to-market mimicking portfolio returns

to the standard CAPM. This study re-evaluates Fama-French model for the Indian market for a longer time period (1993-2013). This study is conducted with a purpose to verify whether the factors in the Fama-French model are valid over time or not and to examine the robustness of the models, I test the models for two shorter time periods of ten years each subdividing this entire period of twenty years. Then these two periods of ten years are further divided into two periods of five years each. In all, the tests are carried out for seven different time periods.

Literature Review

Till date, a number of studies have been undertaken to explore the determinants that explain equity returns across the globe. Fama and French consider CAPM to be mis-specified and believe that their influential paper (1993) incorporates additional risk factors that are absent from CAPM, indicating their results to be consistent with the efficient market hypothesis. However, other researchers consider Fama-French's (1993) results to be indicative of investor irrationality and inefficient markets, particularly with respect to the BE/ME component of the model. Researchers like Lakonishok et al. (1994) attribute BE/ME's explanatory ability on returns to investor overreaction to both good and bad news. Fama and French (1996) argue that the anomalies of the CAPM widely disappear by using a three-factor model. Jan Bartholdy and Paula Peare (2005) compare the performance of one-factor model (CAPM) and the Fama-French three-factor model for estimation of individual stock returns. Lawrence, Geppert, and Prakash (2007) empirically test and compare the performance of the traditional two-moment CAPM, the three-moment CAPM, and the FF three-factor model using the FF 25 portfolios data. Based on the time-series tests and the Fama-Macbeth cross-sectional tests, the FF three-factor model outperforms the CAPM and the three-moment CAPM. In the cross-sectional test, the three-moment CAPM has a higher R^2 than CAPM but in the time-series regression, the performance of CAPM and the three-moment CAPM is comparable. They extract daily adjusted prices from the CRSP tapes from 1970 to 1996 for the study. First, they obtain estimates for individual stock returns based on CAPM using different time frames, data frequencies, and indexes. They find that 5 years of monthly data and an equal-weighted index, as opposed to the commonly recommended value-weighted index, provide the best estimate. The performance of CAPM comes out to be very poor as it explains on average 3% of differences in returns. Then, they obtain estimates for individual stock returns based on the Fama and French model using 5 years of monthly data. This model, however, does not do much better; independent of the index used, it explains on average 5% of differences in returns. The low explanatory power of both the CAPM and the Fama-French model cast doubt on the usefulness of either model for estimation of the cost of equity, at least for the simple estimation techniques used in their study.

There is growing empirical evidence in favor of the three-factor model for other world markets besides the USA. Faff (2001) tests the model in Australian stock market by using shelf index and finds the results supportive of the model. Gaunt(2004) tests the validity of the Fama-French model and the CAPM on the Australian Stock Exchange. He finds that Fama and French three-factor model provides a better explanation of Australian stock returns than the CAPM. P. H. Chou et al. (2012) investigate the explanatory capabilities of three competing multi-factor models when examining various asset-pricing anomalies using Japanese data. The three models considered are Fama-French's (1993) three-factor model, Ferguson and Shockley's (2003) three-factor model, and Liu's (2006) liquidity-augmented two-factor model. The sample consists of monthly returns of common stocks listed on the Tokyo Stock Exchange (TSE) from January 1975 to December 2006. They mainly follow methodology proposed by Brennan, Chordia, and Subrahmanyam (1998). They identified several findings that are different from the U.S. market. Unlike the U.S. evidence where size, book-to-market (BM), and momentum are the major determinants of stock returns, the study finds significant BM and turnover premiums in the Japanese market for 1978-2006. The sub-period analysis reveals that turnover and low price effects are major determinants of stock returns for 1978-1990, whereas the BM premium is significant only for 1991-2006. The small-firm effect is surpassed by the low-price and turnover effects. Also, the low-price and turnover effects for 1978-1990 cannot be explained by any of three asset-pricing models, whereas the BM effect for 1991-2006 is well explained by a conditional version of the Fama-French three-factor model. The results suggest that the explanatory ability of different firm characteristics may have different roots and that among the three competing asset-pricing models, Fama-French model comes out to be the best model that describes stock returns.

James Foye, Dušan Mramor, and Marko Pahor(2013) apply Fama-French three factor model to the Eastern European (EE) countries that joined the European Union (EU) in 2004. They replicate the portfolio ranking methodology of Fama and French (1993). However they use weekly returns which represent a departure from the methodology of Fama and French (1993) who use monthly returns. Equity returns used for the dependent variables in their dataset run from July 2005 to June 2012. For the independent variables, accounting data used for portfolio ranking runs from December 2004 to December 2010. They find that the market value of equity component of Fama-French (1993) factor model performs poorly for stocks listed on the stock market of the EE EU nations. However, beta and Book equity-to-market equity ratio have significant explanatory power on returns. They propose to replace the market value of equity factor of the standard Fama-French model with Net Income/Cash Flow from Operations (NI/CFO) yields. They show that the results are more statistically significant when NI/CFO yields were incorporated into factor models than when ME was used.

In the Indian context, Connor and Sehgal (2003) provide empirical evidence in favor of the Fama-French three-factor model. Kumar and Sehgal (2004) find a strong size effect and a weak value effect for the Indian stock market. Their data comprised of adjusted month-end share prices for 364 companies from July 1989 to March 1999. Mohanty (2001), using data from 3270 companies over a period from September 1991 to March 2000, reports a negative relation between size and average stock returns. He also reports that size and market risk premiums capture most of the cross-sectional variation in stock returns when Fama-French three-factor model is used. Bhavna Bahl (2006) examines the Fama-French three-factor model of stock returns along with its variants, including the one-factor CAPM for 79 stocks listed on the BSE-100 stock market index for India and finds factor portfolios that explain the returns are the market factor, size factor (SMB) and value factor (HML). The study concludes that the three-factor model fairs better in explaining the cross-section of returns in the portfolios than its variants and the CAPM. Yash Pal Taneja (2010) examines the CAPM and the Fama-French three-factor model by taking a sample of 187 companies for a study period of five years, ranging from June 2004 to June 2009. The study concludes that efficiency of Fama-French Model, for being a good predictor, cannot be ignored in India but either of the two factors (size and value) might improve the model.

In this article, we re-examine the relation between average returns and firm characteristics i.e. size and value. We also re-visit the single-factor market model and the Fama-French model for the Indian stock market using data for a longer time-period i.e. from 1993 to 2013.

Data and Methodology

Our study examines monthly data on common stocks listed on the BSE-500 index from September 1993 to September 2013. The number of firms covered significantly increases from 1993 to 2013. The minimum and a maximum number of firms covered during any one-year period are 187 (1993) and 483 (2013). We further examine the same data for different shorter sub-periods, i.e. two ten-year periods and four five-year periods. Share prices and accounting data are from the Prowess database published by the CMIE. The risk-free rate is computed using the 91-days Treasury bill rate. The 91-days T-bill rate is sourced from the Reserve Bank of India's weekly auction data. The implicit yields have been converted to monthly rates. The market portfolio is estimated as the value-weighted portfolio of all the stocks involved in the estimation of SMB and HML portfolios. The risk-free rate (Rf) is deducted from the return of the market portfolio to obtain the market risk premium. Following regression models are run for the six portfolios, that is, S/L, S/M, S/H, B/L, B/M, and B/H:

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + \varepsilon_{pt}$$

The above market model says that the expected return on a portfolio in excess of the risk-free rate is explained by the sensitivity of its return to the excess return on a broad market portfolio.

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + s_p (SMB) + h_p (HML) + \varepsilon_{pt}$$

The above Fama-French three-factor model says that the expected return on a portfolio in excess of the risk-free rate is explained by the sensitivity of its return to three factors: (i) the excess return on a broad market portfolio, (ii) the difference between the return on a portfolio of small stocks and the return on a portfolio of large stocks (SMB) and (iii) the difference between the return on a portfolio of high-book-to-market stocks and the return on a portfolio of low-book-to-market stocks (HML).

The size and value sorted portfolios

We sort stocks on size (market capitalization or market cap) and the ratio of book equity to market equity (B/M). The explanatory returns in our study are for portfolios constructed from 2 x 3 sorts on the size and B/M. At the end of September of each year *t* from 1993 to 2013, all sample stocks are ranked on the basis of size. The median sample size is then used to split the sample companies into two groups: small (S) and big (B). The sample stocks are broken into three B/M groups based on the breakpoints for the bottom 30% (low), middle 40% (medium), and top 30% (high) of the ranked values of B/M for the sample stocks.

We construct six portfolios (S/L, S/M, S/H, B/L, B/M, B/H) from the intersection of the two size and three B/M groups. For example, S/L portfolio contains stocks that are in the small size group and also in the low B/M group while B/H consists of big size stocks that also have high B/M ratios. We compute monthly equally-weighted returns for each of the six portfolios from October of year *t* to September of *t* + 1, and the portfolios are reformed in October of each year.

The factor portfolios

The Fama-French model involves the use of three factors for explaining common stock returns: the market factor (market index return minus risk-free rate) proposed by the CAPM, and factors related to size and value. We have discussed the market factor earlier in this section. The other two factors i.e. size and value factors are constructed following Fama and French (1993). SMB (small minus big) is meant to mimic the risk factor in returns related to size. SMB is the difference, each month, between the simple average of the returns on the three small stock portfolios (S/L, S/M, S/H) and the simple average of the returns on the three big stock portfolios (B/L, B/M, B/H). Thus, SMB is the difference between the average returns on small and big stock portfolios. HML (high minus low) is meant to mimic the risk factor in returns related to value. HML is the difference, each month, between the simple average of the returns on the two high-BE/ME portfolios (S/H and B/H) and the average of the returns on the two low-BE/ME portfolios (S/L and B/L).

Tests of the CAPM and the Fama-French three-factor model

Descriptive statistics

Panel A of Table 1 shows the descriptive statistics on the portfolio returns of the six size and value sorted portfolios and the three-factor portfolio returns for the period 1993-2013. The results report a negative relation between size and average return, and a positive relation between average return and value irrespective of size. As shown in Table 1, all sample monthly means are positive and range from 0.59% (B/L, B/M) to 4.07% (S/H). The average monthly (a) excess market return is 1.58%, (b) SMB return is 1.76% and (c) HML return is 1.07%. A finding of positive average return is consistent with the view that investors are compensated with a positive premium for bearing factor risk. The portfolio returns have fairly high volatility, for example, S/H has 12.81%. Considering the SD of the six portfolios, it is observed that the small stocks are more volatile than the large stocks, while the returns on the small stocks are higher than those of the large stocks. All the portfolios have some positive skewness and positive kurtosis.

Panel B of Table 1 presents the sample correlation across all variables. Overall, the six portfolio returns show a higher correlation with the MKT than with SMB or HML. The SMB (HML) shows a higher correlation with small (high-BM) stocks than with large (low-BM) stocks.

Panel A of Table 2 shows the descriptive statistics on the portfolio returns of the six size and value sorted portfolios and the three-factor portfolio returns for the first ten-year sub-period (1993-2003). The results report a negative relation between size and average return, and a positive relation between average return and value irrespective of size. The table shows that the average monthly (a) excess market return is 1.44%, (b) SMB return is 1.64% and (c) HML return is 1.05%. The table also shows that the three small stock portfolios S/L, S/M and S/H generate higher returns than the three big stock portfolios B/L, B/M, and B/H. The three small stock portfolios generate a combined return of 6.94% per month while the big stock portfolios generate a combined return of 1.33% per month. A finding of positive average return is consistent with the view that investors are compensated with a positive premium for bearing factor risk. The portfolio returns have fairly high volatility, for example, S/H has 12.55%. Considering the SD of the six portfolios, it is observed that the small stocks are more volatile than the large stocks, while the returns on the small stocks are higher than those of the large stocks. All the portfolios have some positive skewness and positive kurtosis.

Panel B of Table 2 presents the sample correlation across all variables. Overall, the six portfolio returns show a higher correlation with the MKT than with SMB or HML. The SMB (HML) shows a higher correlation with small (high-BM) stocks than with large (low-BM) stocks.

In Table 3, Panel A, we report the descriptive statistics on the six size and book-to-market equity sorted portfolios for the second ten-year sub-period (2003-2013). The results report a negative relation between size and average return, and a positive relation between average return and value irrespective of size. The table shows that the average monthly (a) excess market return is 1.72 %, (b) SMB return is 1.89% and (c) HML return is 1.08%. The table also shows that the three small stock portfolios S/L, S/M and S/H generate higher returns than the three big stock portfolios B/L, B/M, and B/H. The three small stock portfolios generate a combined return of 9.69% per month while the big stock portfolios generate a combined return of 3.49% per month. A finding of positive average return is consistent with the view that investors are compensated with a positive premium for bearing factor risk. The portfolio returns have fairly high volatility, for example, S/H has 13.11% and B/H has 11.10%. Considering the SD of the six portfolios, it is observed that the value stocks are more volatile than the growth stocks. All the portfolios have some positive skewness and positive kurtosis.

Panel B of Table 3 presents the sample correlation across all variables. Overall, the six portfolio returns show a higher correlation with the MKT than with SMB or HML. The SMB (HML) shows a higher correlation with small (high-BM) stocks than with large (low-BM) stocks.

In Table 4, Panel A, we report the descriptive statistics on the six size and book-to-market equity sorted portfolios for the first five-year sub-period (1993-1998). The results report a negative relation between size and average return, and a positive relation between average return and value irrespective of size. The table shows that the average monthly (a) excess market return is 0.55%, (b) SMB return is 1.29% and (c) HML return is -0.25%. The table also shows that the three small stock portfolios S/L, S/M and S/H generate higher returns than the three big stock portfolios B/L, B/M, and B/H. the three small stock portfolios generate a combined return of 3.08% per month while the big stock portfolios generate a combined return of -1.57% per month. The portfolio returns have fairly high volatility, for example, S/H has 13.49%. Considering the SD of the six portfolios, it is observed that the small stocks are more volatile than the large stocks, while the returns on the small stocks are higher than those of the large stocks. All the portfolios have some positive skewness and four out of six portfolios have positive kurtosis.

Panel B of Table 4 presents the sample correlation across all variables. Overall, the six portfolio returns show a higher correlation with the MKT than with SMB or HML. The SMB (HML) shows a higher correlation with small (high-BM) stocks than with large (low-BM) stocks.

In Table 5, Panel A, we report the descriptive statistics on the six size and book-to-market equity sorted portfolios for the second five-year sub-period (1998-2003). The results report a negative relation between size and average return, and a positive relation between average return and

value irrespective of size. The table shows that the average monthly (a) excess market return is 2.33%, (b) SMB return is 1.98% and (c) HML return is 2.36%. The table also shows that the three small stock portfolios S/L, S/M and S/H generate higher returns than the three big stock portfolios B/L, B/M, and B/H. the three small stock portfolios generate a combined return of 10.79% per month while the big stock portfolios generate a combined return of 4.22% per month. A finding of positive average return is consistent with the view that investors are compensated with a positive premium for bearing factor risk. The portfolio returns have fairly high volatility, for example, S/H has 11.46% and B/H has 10.21%. Considering the SD of the six portfolios, it is observed that the value stocks are more volatile than the growth stocks.

Panel B of Table 5 presents the sample correlation across all variables. Overall, the six portfolio returns show a higher correlation with the MKT than with SMB or HML. The SMB (HML) shows a higher correlation with small (high-BM) stocks than with large (low-BM) stocks.

In Table 6, Panel A, we report the descriptive statistics on the six size and book-to-market equity sorted portfolios for the third five-year sub-period (2003-2008). The results report a negative relation between size and average return, and a positive relation between average return and value irrespective of size. The table shows that the average monthly (a) excess market return is 2.46%, (b) SMB return is 1.86% and (c) HML return is 1.62%. The table also shows

that the three small stock portfolios S/L, S/M and S/H generate higher returns than the three big stock portfolios B/L, B/M, and B/H. The three small stock portfolios generate a combined return of 11.34% per month while the big stock portfolios generate a combined return of 5.24% per month. A finding of positive average return is consistent with the view that investors are compensated with a positive premium for bearing factor risk. The portfolio returns have fairly high volatility, for example, S/H has 11.26%. Considering the SD of the six portfolios, it is observed that the small stocks are more volatile than the big stocks. All except one portfolio have some negative skewness and all portfolios have positive kurtosis.

Panel B of Table 6 presents the sample correlation across all variables. Overall, the six portfolio returns show a higher correlation with the MKT than with SMB or HML. The SMB (HML) shows a higher correlation with small (high-BM) stocks than with large (low-BM) stocks.

In Table 7, Panel A, we report the descriptive statistics on the six size and book-to-market equity sorted portfolios for the fourth five-year sub-period (2008-2013). The results report a negative relation between size and average return, and a positive relation between average return and value irrespective of size. The table shows that the average monthly (a) excess market return is 0.99%, (b) SMB return is 1.92% and (c) HML return is 0.55%. The table also shows that the three small stock portfolios S/L, S/M and S/H generate higher returns than the three big stock portfolios B/L, B/M, and B/H. the three small stock portfolios generate a combined return of 8.03% per month while the big stock portfolios generate a combined return of 1.71% per month. A finding of positive average return is consistent with the view that investors are compensated with a positive premium for bearing factor risk. The portfolio returns have fairly high volatility, for example, S/H has 14.81%. Considering the SD of the six portfolios, it is observed that the small stocks are more volatile than the big stocks. All portfolios have some positive skewness and positive kurtosis.

Panel B of Table 7 presents the sample correlation across all variables. Overall, the six portfolio returns show a higher correlation with the MKT than with SMB or HML. The SMB (HML) shows a higher correlation with small (high-BM) stocks than with large (low-BM) stocks.

Empirical Results

Regression results for the period 1993-2013

In Table 8, the market model results report that all beta estimates are significant at the 1% level, suggesting that the market risk premium is important in explaining returns.

The estimates on the intercept terms are now examined. If the single-factor model fully explained the returns on the portfolios, then the intercepts should not be significantly different from zero (Black et al., 1972). Results indicate that four out of six intercept terms are statistically different from zero. In particular, B/L, B/M, and B/H portfolios exhibit a negative alpha, indicating that these portfolios do not earn a return consistent with their beta risk. To formally test whether all the intercepts are jointly equal to zero, the *GRS*-statistic is calculated. The results indicate that this statistics is statistically significant, indicating that we should reject the null that all intercepts are jointly equal to zero.

Fama-French regression results indicate that *beta* estimates are significant for all portfolios, again indicating that exposure to the market risk premium is extremely important in explaining variation in returns.

We now turn to the estimate of *s*, which captures the amount each portfolio loads onto the SMB factor. As expected, the *s* coefficient for small portfolios is greater than that of large portfolios.

In fact, the B/H portfolio has a slight negative but significant loading on SMB, while all small portfolios demonstrate a large positive and significant loading on SMB. This monotonic relationship between size and the SMB factor is consistent with previous studies (Fama and French, 1993, 1996, 2006; Gaunt, 2004, 2012; Gharghori et al., 2007a). With the exception of one of the three large portfolios, all *s* coefficients are statistically different from zero. These results indicate that SMB is indeed an important factor in the Indian equity market.

The influence of the HML factor on portfolio returns also demonstrates a regular pattern related to changes in book-to-market ratios. Firstly, portfolios belonging to low BE/ME ratio have negative loadings on the HML factor, with all estimates being significantly different from zero. Secondly, the loading increases as average book-to-market ratios increase, leading to a strong positive and significant factor loading for the value portfolios. This result demonstrates

that HML possesses explanatory power. These results are consistent with international studies on the three-factor model (Gaunt, 2012; Fama and French, 1993, 1996, 1998).

Finally, an examination of the intercept terms in Table 8 indicates that all portfolios have a significant estimate, with the exception of the portfolio B/H.

The *GRS*-statistic is significant, suggesting that we should reject the null that the intercept terms are jointly equal to zero, and consequently that even the three-factor model cannot explain the time series of portfolios well. However, the three-factor model explanatory power for each portfolio, as measured by average R^2, is substantially higher than the comparative results from the market factor. The average R^2 for the six portfolios is 83%, which is a substantial increase over the market model, which had an average of 66%.

Now we will see which of the two models gives a better result when we divide this sample period into two sub-periods (i.e. 1993-2003 and 2003-2013) of 10 years each.

Regression results for the two ten-year sub-periods

Results for the period 1993-2003

In Table 9, the market model results report that all beta estimates are significant at the 1% level, suggesting that the market risk premium is important in explaining returns.

The intercept terms are now examined. Results indicate that three out of six intercept terms are statistically different from zero.

To formally test whether all the intercepts are jointly equal to zero, the *GRS*-statistics is calculated, which is statistically significant at 1% level, indicating that we should reject the null that all intercepts are jointly equal to zero.

The results from estimating three-factor model on the 6 portfolio returns indicate that *beta* estimate is significant for all portfolios, again indicating that exposure to the market risk premium is extremely important in explaining variation in returns.

We now turn to the estimate of *s*, which captures the size effect. As expected, the *s* coefficient is greater for small market capitalization portfolios than those for the big market capitalization portfolios. In fact, the big market capitalization portfolios have a slight negative or insignificant loading on SMB, while small market capitalization portfolios demonstrate a large positive and significant *s* coefficient. This monotonic relationship between size and the SMB factor is consistent with previous studies (Fama and French, 1993, 1996, 2006; Gaunt, 2004, 2012; Gharghori et al., 2007a).

The influence of the HML factor on portfolio returns also demonstrates a regular pattern related to changes in book-to-market ratios. Firstly, portfolios belonging to low BE/ME ratio have negative h coefficient. Secondly, the *h* coefficient increases as average book-to-market ratios increase, leading to a strong positive and significant *h* coefficient for the value portfolios. This result demonstrates that HML possesses explanatory power. These results are consistent with international studies on the three-factor model (Gaunt, 2012; Fama and French, 1993, 1996, 1998).

Finally, an examination of the intercept terms in Table 9 indicates that all portfolios have an insignificant estimate, with the exception of two portfolios. These estimates are lower than the estimates from the single-factor model suggesting that the pricing errors from the three-factor model are lower. For example, the average intercept term (using absolute values) for the portfolios in the large size quintile is 0.008 using the three-factor model, while it is 0.010 using the market model. The *GRS*-statistic is insignificant, suggesting that we should not reject the null that the intercept terms are jointly equal to zero, and consequently that the three-factor model explains the time series of portfolios well. The three-factor model explanatory power for each portfolio, as measured by average R^2, is substantially higher than the comparative results from the market factor. The average R^2 for the six portfolios is 77%, which is a substantial increase over the market model, which had an average of 58%.

This result indicates that not only does the three-factor model lead to smaller intercept estimate, it also explains a greater proportion of the variation in portfolio returns. This suggests that the three-factor model is the preferred model.

Results using the 6 portfolios indicate that the three-factor model provides additional explanatory power in explaining the time-series variation in returns when compared to the CAPM.

This provides fairly conclusive evidence that the three-factor model is an improvement on the CAPM in explaining the time-series variation in portfolio returns.

Results for the period 2003-2013

In Table 10, the market model results report that all beta estimates are significant at the 1% level, suggesting that the market risk premium is important in explaining returns.

The estimates on the intercept terms are now examined. Results indicate that all except one intercept terms are statistically different from zero. To formally test whether all the intercepts are jointly equal to zero, the *GRS*-statistics is calculated, which out to be statistically significant, indicating that we should reject the null that all intercepts are jointly equal to zero.

Results from estimating Fama-French model indicate that *beta* estimate is significant for all portfolios, again indicating that exposure to the market risk premium is extremely important in explaining variation in returns.

We now turn to the estimate of *s*, which captures the size effect. As expected, the *s* coefficient is greater for small market capitalization portfolios than those for the big market capitalization portfolios. In fact, the B/H portfolio has a slight negative loading on SMB, while small market capitalization portfolios demonstrate a large positive and significant *s* coefficient. All *s* coefficients are statistically different from zero. These results indicate that SMB is indeed an important factor in the Indian equity market.

Now we examine the influence of the HML factor on portfolio returns which captures the value effect. Firstly, low BE/ME portfolios have negative *h* coefficient, with estimates being significantly different from zero. Secondly, the *h* coefficient increases as book-to-market ratios increase, leading to a strong positive and significant value effect. This result is the evidence that HML possesses explanatory power in the Indian equity market. These results are consistent with international studies on the three-factor model (Gaunt, 2012; Fama and French, 1993, 1996, 1998).

Finally, an examination of the intercept terms of the three-factor model in Table 10 indicates that more than 50% portfolios have a significant estimate. These estimates are lower than the estimates from the market model, suggesting that the pricing errors from the three-factor model are lower. For example, the average intercept term (using absolute values) for the portfolios is 0.011 using the three-factor model, while it is 0.009 using the CAPM.

The *GRS*-statistic is significant, suggesting that we should reject the null that the intercept terms are jointly equal to zero, and consequently that the three-factor model does not explain the time series of portfolios well.

But the three-factor model explanatory power for each portfolio, as measured by R^2, is higher than the comparative results from the single-factor model. The average R^2 for the six portfolios is 89%, which is a substantial increase over the market model, which had an average of 75%. This result indicates that not only does the three-factor model lead to smaller intercept estimate, it also explains a greater proportion of the variation in portfolio returns. This suggests that the three-factor model is the preferred model as compared to the market model.

After analyzing the results of the entire sample period (1993-2013) and those of the two sub-periods (1993-2003 and 2003-2013) of 10 years each, we conclude that the sub-period 1993-2003 provides fairly conclusive evidence that the three-factor model is an improvement on the single-factor model in explaining the time-series variation in portfolio returns. Even though the three-factor model does not explain the time-series of variation in portfolio returns well, it performs better than the market model.

Regression results for the four five-year sub-periods

Now we will see what happens when the sample period is further reduced to just five years. The two sub-periods i.e. 1993-2003 and 2003-2013 are further divided into two sub-periods each. So, now we have 1993-2003 divided into 1993-1998 and 1998-2003 of five years each, and 2003-2013 divided into 2003-2008 and 2008-2013 of five years each.

Results for the period 1993-1998

The market model results in Table 11 report that all beta estimates are significant, suggesting that the market risk premium is important in explaining returns.

The estimates on the intercept terms are now examined. Results indicate that two out of six intercept terms are statistically different from zero. In particular, S/M, B/L, B/M and B/H portfolios exhibit a negative alpha, indicating that these portfolios do not earn a return consistent with their beta risk. There is also evidence that alphas (absolute values) increase as we move from the low book-to-market portfolios to the high book-to-market portfolios, although

nearly all other portfolios have insignificant alphas. To formally test whether all the intercepts are jointly equal to zero, the *GRS*-statistics is calculated, which is statistically significant, indicating that we should reject the null that all intercepts are jointly equal to zero.

The results from estimating the Fama-French equation on the 6 portfolio returns indicate that *beta* estimates are significant for all portfolios, again indicating that exposure to the market risk premium is extremely important in explaining variation in returns.

We now turn to the estimate of *s*, which captures the size effect. As expected, the *s* coefficient is greater for small market capitalization portfolios than those for the big market capitalization portfolios. In fact, the big market capitalization portfolios have a slight negative or insignificant *s* coefficient, while small market capitalization portfolios demonstrate a large positive and significant *s* coefficient. The *s* coefficients of small market capitalization portfolios are statistically different from zero, while those of big market capitalization are not. These results indicate that there is doubt whether SMB is an important factor in the Indian equity market or not.

Now we examine the influence of the HML factor on portfolio returns which captures the value effect. Firstly, low BE/ME portfolios have negative *h* coefficient. Secondly, the *h* coefficient increases as book-to-market ratios increase, leading to a strong positive and significant value effect. This result is the evidence that HML possesses explanatory power in the Indian equity market. These results are consistent with international studies on the three-factor model (Gaunt, 2012; Fama and French, 1993, 1996, 1998).

Finally, an examination of the intercept terms of the three-factor model in Table 11 indicates that more than 50% portfolios have a significant estimate. The *GRS*-statistic is significant at 5% level, suggesting that we should reject the null that the intercept terms are jointly equal to zero, and consequently that the three-factor model does not explain the time series of portfolios well.

But the three-factor model explanatory power for each portfolio, as measured by R^2, is substantially higher than the comparative results from the CAPM. The average R^2 for the six portfolios is 84%, which is a substantial increase over the CAPM, which had an average of 60%. This suggests that the three-factor model is the preferred model when compared to the market model.

Results for the period 1998-2003

In Table 12, the market model results report that all beta estimates are significant at the 1% level, suggesting that the market risk premium is important in explaining returns.

The estimates on the intercept terms are now examined. Results show that two out of six intercept terms are statistically different from zero, indicating that the model does not explain the returns on the portfolios fully. To formally test whether all the intercepts are jointly equal to zero, the *GRS*-statistics is calculated which is statistically significant, indicating that we should reject the null that all intercepts are jointly equal to zero.

Fama-French model results in Table 12 indicate that *beta* estimate is significant for all portfolios, again indicating that exposure to the market risk premium is extremely important in explaining variation in returns.

We now turn to the estimate of *s*, which captures the size effect. As expected, the *s* coefficient is greater for small market capitalization portfolios than those for the big market capitalization portfolios. In fact, the big market capitalization portfolios have a slight negative or insignificant *s* coefficient, while small market capitalization portfolios demonstrate a large positive and significant *s* coefficient. This monotonic relationship between size and the SMB factor is consistent with previous studies (Fama and French, 1993, 1996, 2006; Gaunt, 2004, 2012; Gharghori et al., 2007a). With the exception of two of the large portfolios, all *s* coefficients are statistically different from zero. These results indicate that SMB is an important factor in the Indian equity market.

The influence of the HML factor on portfolio returns also demonstrates a regular pattern related to changes in book-to-market ratios. Firstly, low BE/ME portfolios have negative *h* coefficient, with four out of six estimates being significantly different from zero. Secondly, the *h* coefficient increases as book-to-market ratios increase, leading to a strong positive and significant value effect. This result is the evidence that HML possesses explanatory power in the Indian equity market. These results are consistent with international studies on the three-factor model (Gaunt, 2012; Fama and French, 1993, 1996, 1998).

Finally, an examination of the intercept terms of the three-factor model in Table 12 indicates that all portfolios have an insignificant estimate. These estimates are lower than the

estimates from the single-factor model, suggesting that the pricing errors from the three-factor model are lower. For example, the average intercept term (using absolute values) for the portfolios is 0.007 using the three-factor model, while it is 0.015 using the CAPM.

The *GRS*-statistic is insignificant, suggesting that we should not reject the null that the intercept terms are jointly equal to zero, and consequently that the three-factor model explains the time series of portfolios well.

The three-factor model explanatory power for each portfolio, as measured by R^2, is substantially higher than the comparative results from the CAPM. The average R^2 for the six portfolios is 74%, which is a substantial increase over the CAPM, which had an average of 57%. This result indicates that not only does the three-factor model lead to smaller intercept estimate, it also explains a greater proportion of the variation in portfolio returns. This suggests that the three-factor model is the preferred model.

Results using the 6 portfolios indicate that the three-factor model provides additional explanatory power in explaining the time-series variation in returns when compared to the CAPM. Table 12 indicates that nearly all portfolios have significant coefficients on the SMB and HML factors. These results also indicate that the three-factor model leads to smaller intercept terms. This provides fairly conclusive evidence that the three-factor model is an improvement on the CAPM in explaining the time-series variation in portfolio returns.

Results for the period 2003-2008

In Table 13, the market model results report that all beta estimates are significant at the 1% level, suggesting that the market risk premium is important in explaining returns.

The estimates on the intercept terms are now examined. Results indicate that two out of six intercept terms are statistically different from zero. In particular, B/L and B/M portfolios exhibit a negative alpha, indicating that these portfolios do not earn a return consistent with their beta risk. To formally test whether all the intercepts are jointly equal to zero, the *GRS*-statistics is calculated. The result indicates that this statistic is statistically significant, indicating that we should reject the null that all intercepts are jointly equal to zero.

Table 13 also presents the results from estimating Fama-French equation on the 6 portfolio returns. Results indicate that *beta* estimate is significant for all portfolios, again indicating that exposure to the market risk premium is extremely important in explaining variation in returns.

We now turn to the estimate of *s*, which captures the amount each portfolio loads onto the SMB factor. As expected, the loading on the SMB is greater for portfolios with small market capitalization stocks than for portfolios with big market capitalization stocks. In fact, the B/H portfolio has an insignificant loading on SMB, while small portfolios demonstrate a large positive and significant loading on SMB. This monotonic relationship between size and the SMB factor is consistent with previous studies (Fama and French, 1993, 1996, 2006; Gaunt, 2004, 2012; Gharghori et al., 2007a). With the exception of one of the large portfolios, all *s* coefficients are statistically different from zero. These results indicate that SMB is indeed an important factor in the Indian equity market.

Examining the influence of the HML factor on portfolio returns, portfolios belonging to low BE/ME ratio have negative loadings on the HML factor, with 50% estimates being significantly different from zero. Secondly, the loading increases as book-to-market ratios increase, leading to a strong positive and significant factor loading for the high BE/ME portfolios. This result demonstrates that HML possesses explanatory power. These results are consistent with international studies on the three-factor model (Gaunt, 2012; Fama and French, 1993, 1996, 1998).

Finally, an examination of the intercept terms in Table 13 indicates that all portfolios have a significant estimate. However, the *GRS*-statistic demonstrates otherwise. The *GRS*-statistic is insignificant, suggesting that we should not reject the null that the intercept terms are jointly equal to zero, and consequently that the three-factor model explains the time series of portfolios well.

The three-factor model explanatory power for each portfolio, as measured by adjusted R^2, is substantially higher than the comparative results from the CAPM. The average adjusted R^2 for the 6 equations is 89%, which is a substantial increase over the CAPM, which had an average of 69%. This result indicates that the three-factor model explains a greater proportion of the variation in portfolio returns. Results for

this sub-period do not provide any conclusive evidence that the three-factor model is an improvement on the CAPM in explaining the time-series variation in portfolio returns.

Results for the period 2008-2013

In Table 14, the market model results report that all beta estimates are significant at the 1% level, suggesting that the market risk premium is important in explaining returns.

The estimates on the intercept terms are now examined. Results indicate that four out of six intercept terms are statistically different from zero. In particular, B/L, B/M, and B/H portfolios exhibit a negative alpha, indicating that these portfolios do not earn a return consistent with their beta risk. To formally test whether all the intercepts are jointly equal to zero, the *GRS*-statistics is calculated. This result indicates that this statistics is statistically significant, indicating that we should reject the null that all intercepts are jointly equal to zero.

Fama-French regression results indicate that *beta* estimates are significant for all portfolios, again indicating that exposure to the market risk premium is extremely important in explaining variation in returns.

We now turn to the estimate of *s*, which captures the size effect. As expected, the *s* coefficient for small portfolios is greater than that of large portfolios. In fact, the B/H portfolio has a slight negative coefficient on SMB, while all small portfolios demonstrate a large positive and significant coefficient on SMB. This monotonic relationship between size and the SMB factor is consistent with previous studies (Fama and French, 1993, 1996; Gaunt, 2004, 2012; Gharghori et al., 2007a). With the exception of one of the three large portfolios, all *s* coefficients are statistically different from zero. These results indicate that SMB is indeed an important factor in the Indian equity market.

The influence of the HML factor on portfolio returns also demonstrates a regular pattern related to changes in book-to-market ratios. Firstly, portfolios belonging to low BE/ME ratio have negative coefficients on the HML factor, with all estimates being significantly different from zero except the S/M and B/M portfolios. Secondly, the coefficient increases as average book-to-market ratios increase, leading to a strong positive and significant *h* coefficient for the value portfolios. This result demonstrates that HML possesses explanatory power. These results are consistent with international studies on the three-factor model (Gaunt, 2012; Fama and French, 1993, 1996, 1998).

Finally, an examination of the intercept terms in Table 14 indicates that all except two portfolios have an insignificant estimate. The *GRS*-statistic is insignificant, suggesting that we should not reject the null that the intercept terms are jointly equal to zero, and consequently that the three-factor model explains the time series of portfolios well.

The three-factor model explanatory power for each portfolio, as measured by average R^2, is higher than the comparative results from the market factor. The average R^2 for the six portfolios is 94%, which is more than the market model, which had an average of 83%. This result indicates that the three-factor model explains a greater proportion of the variation in portfolio returns. This suggests that the three-factor model is the preferred model.

Results using the 6 portfolios indicate that the three-factor model provides additional explanatory power in explaining the time-series variation in returns when compared to the CAPM. Table 14 indicates that nearly all portfolios have significant coefficients on the SMB and HML factors.

So, in all the four five-year sample-periods, Fama-French three-factor model is the preferred model over the single-factor model. Hence, we suggest that the three-factor model dominates the market model and that the overall market factor alone is not sufficient to explain the variation in the cross-section of average stock returns.

5. Conclusion

Our findings suggest that small and high book-to-market equity firms generate higher returns than big and low book-to-market equity firms respectively for the Indian market investigated in this paper. Since small and high book-to-market equity firms outperform big and low book-to-market equity firms we propose that such firms carry a risk premium. Therefore, mean-variance efficient investors should be able to achieve higher returns by simply shifting their portfolios in favor of these characteristics. The results clearly indicate a firm size and value effect and suggest that the premium is a compensation for the risk that is not captured by the market model. The findings indicate that the CAPM is misspecified, as the risk factors investigated in this paper are not captured by the CAPM for any of sample periods investigated.

4.1 Descriptive statistics

Table 1.

Panel A. Summary statistics on the portfolio returns (October 1993- September 2013, 240 observations)

Portfolio	S/L	S/M	S/H	B/L	B/M	B/H	Mkt.	SMB	HML
Mean	0.0216	0.0208	0.0407	0.0059	0.0059	0.0122	0.0158	0.0176	0.0107
Standard Deviation	0.0921	0.0937	0.1281	0.0801	0.0893	0.1059	0.0858	0.0461	0.0617
Skewness	0.4341	0.4459	1.8119	-0.0617	0.2762	0.5106	0.3938	2.2188	1.5550
Kurtosis	2.3228	1.7350	7.5073	2.7717	2.9415	1.5739	2.0129	11.6013	6.5372

Panel B. Correlation between portfolios

	SL-RF	SM-RF	SH-RF	BL-RF	BM-RF	BH-RF	RM-RF	SMB	HML
RM-RF	0.8121	0.8020	0.5774	0.8959	0.9155	0.8359	1.0000	-0.1310	0.1302
SMB	0.2518	0.2419	0.5868	-0.0777	-0.0643	-0.0478	-0.1310	1.0000	0.4311
HML	0.1033	0.3269	0.7018	0.0623	0.1979	0.4520	0.1302	0.4311	1.0000

Table 2

Panel A. Summary statistics on the portfolio returns (October 1993- September 2003, 120 observations)

Portfolio	S/L	S/M	S/H	B/L	B/M	B/H	Mkt.	SMB	HML
Mean	0.0172	0.0149	0.0373	0.0026	0.0024	0.0083	0.0144	0.0164	0.0105
Standard Deviation	0.0903	0.0881	0.1255	0.0756	0.0848	0.1009	0.0862	0.0501	0.0660
Skewness	0.8735	0.5917	2.3013	-0.2044	0.2130	0.3481	0.3068	2.3735	1.4534
Kurtosis	3.2895	0.5620	10.5129	0.3398	-0.3315	-0.2376	-0.1800	12.8348	5.7251

Panel B. Correlation between portfolios

	SL-RF	SM-RF	SH-RF	BL-RF	BM-RF	BH-RF	RM-RF	SMB	HML
RM-RF	0.7829	0.7366	0.4573	0.8403	0.8861	0.7777	1.0000	-0.1605	0.0131
SMB	0.2419	0.2684	0.6252	-0.1418	-0.1176	-0.0537	-0.1605	1.0000	0.4700
HML	0.0393	0.2793	0.7115	-0.0631	0.1230	0.4091	0.0131	0.4700	1.0000

Table 3

Panel A. Summary statistics on the portfolio returns (October 2003- September 2013, 120 observations)

Portfolio	S/L	S/M	S/H	B/L	B/M	B/H	Mkt.	SMB	HML
Mean	0.0260	0.0267	0.0442	0.0092	0.0095	0.0162	0.0172	0.0189	0.0108
Standard Deviation	0.0940	0.0991	0.1311	0.0845	0.0938	0.1110	0.0857	0.0418	0.0574
Skewness	0.0410	0.3109	1.3981	0.0158	0.3044	0.6183	0.4884	1.9665	1.7086
Kurtosis	1.7831	2.5108	5.3721	4.3337	5.1673	2.7946	4.3912	8.8068	7.9086

Panel B. Correlation between portfolios

	SL-RF	SM-RF	SH-RF	BL-RF	BM-RF	BH-RF	RM-RF	SMB	HML
RM-RF	0.8411	0.8648	0.6932	0.9492	0.9452	0.8914	1.0000	-0.0975	0.2665
SMB	0.2650	0.2176	0.5501	-0.0129	-0.0099	-0.0442	-0.0975	1.0000	0.3782
HML	0.1753	0.3825	0.6978	0.1924	0.2791	0.5041	0.2665	0.3782	1.0000

Table 4

Panel A. Summary statistics on the portfolio returns (October 1993- September 1998, 60 observations

Portfolio	S/L	S/M	S/H	B/L	B/M	B/H	Mkt.	SMB	HML
Mean	0.0078	0.0008	0.0222	0.0027	-0.0069	-0.0115	0.0055	0.0129	-0.0025
Standard Deviation	0.0964	0.0911	0.1349	0.0689	0.0809	0.0965	0.0839	0.0605	0.0664
Skewness	1.7101	0.8468	3.1840	0.2884	0.5377	0.4804	0.8563	2.6307	2.5449
Kurtosis	6.3941	1.1992	16.6393	-0.5372	0.3931	-0.6025	0.7802	12.5946	12.5845

Panel B. Correlation between portfolios

	SL-RF	SM-RF	SH-RF	BL-RF	BM-RF	BH-RF	RM-RF	SMB	HML
RM-RF	0.7801	0.7323	0.3085	0.8791	0.9446	0.8320	1.0000	-0.1863	-0.1042
SMB	0.2952	0.3161	0.7630	-0.1162	-0.0983	-0.0493	-0.1863	1.0000	0.5856
HML	-0.0142	0.1610	0.7651	-0.1089	-0.0312	0.2138	-0.1042	0.5856	1.0000

Table 5

Panel A. Summary statistics on the portfolio returns (October 1998- September 2003, 60 observations)

Portfolio	S/L	S/M	S/H	B/L	B/M	B/H	Mkt.	SMB	HML
Mean	0.0267	0.0289	0.0523	0.0024	0.0117	0.0281	0.0233	0.0198	0.0236
Standard Deviation	0.0835	0.0834	0.1146	0.0823	0.0882	0.1021	0.0884	0.0372	0.0635
Skewness	-0.2498	0.4288	1.1710	-0.4921	-0.0786	0.2192	-0.1780	1.0757	0.4962
Kurtosis	-0.4580	0.3340	2.3622	0.7064	-0.6077	0.2287	-0.5089	1.9370	1.3408

Panel B. Correlation between portfolios

	SL-RF	SM-RF	SH-RF	BL-RF	BM-RF	BH-RF	RM-RF	SMB	HML
RM-RF	0.7888	0.7381	0.6148	0.8209	0.8330	0.7269	1.0000	-0.1557	0.0890
SMB	0.1369	0.1794	0.3778	-0.1948	-0.1786	-0.1019	-0.1557	1.0000	0.2954
HML	0.0601	0.3650	0.6372	-0.0253	0.2344	0.5564	0.0890	0.2954	1.0000

Table 6

Panel A. Summary statistics on the portfolio returns (October 2003- September 2008, 60 observations)

Portfolio	S/L	S/M	S/H	B/L	B/M	B/H	Mkt.	SMB	HML
Mean	0.0314	0.0328	0.0492	0.0098	0.0149	0.0277	0.0246	0.0186	0.0162
Standard Deviation	0.0989	0.0986	0.1126	0.0853	0.0857	0.1053	0.0873	0.0421	0.0455
Skewness	-0.5824	-0.3839	-0.0169	-0.8137	-0.8803	-0.1304	-0.2857	0.3530	1.7899
Kurtosis	-0.1419	0.0951	0.2177	0.4973	0.8607	0.7281	1.5966	-0.5959	6.8836

Panel B. Correlation between port folios

	SL-RF	SM-RF	SH-RF	BL-RF	BM-RF	BH-RF	RM-RF	SMB	HML
RM-RF	0.7886	0.7910	0.7292	0.9421	0.9119	0.8198	1.0000	-0.0542	0.1106
SMB	0.4603	0.4325	0.5463	0.0878	0.1266	0.0492	-0.0542	1.0000	0.1504
HML	0.0947	0.3406	0.4166	0.0578	0.0886	0.5540	0.1106	0.1504	1.0000

Table 7

Panel A. Summary statistics on the portfolio returns (October 2008- September 2013, 60 observations)

Portfolio	S/L	S/M	S/H	B/L	B/M	B/H	Mkt.	SMB	HML
Mean	0.0206	0.0205	0.0392	0.0085	0.0040	0.0046	0.0099	0.0192	0.0055
Standard Deviation	0.0892	0.1000	0.1481	0.0844	0.1016	0.1161	0.0842	0.0419	0.0672
Skewness	0.8484	0.9943	2.0420	0.8734	1.0685	1.2599	1.3550	3.6601	1.7627
Kurtosis	5.3392	5.5122	7.0148	8.8985	7.8408	5.0753	8.8920	19.2256	7.5004

Panel B. Correlation between portfolios

	SL-RF	SM-RF	SH-RF	BL-RF	BM-RF	BH-RF	RM-RF	SMB	HML
RM-RF	0.9016	0.9397	0.6790	0.9627	0.9838	0.9610	1.0000	-0.1417	0.3757
SMB	0.0509	0.0071	0.5633	-0.1149	-0.1245	-0.1280	-0.1417	1.0000	0.5488
HML	0.2373	0.4156	0.8442	0.2910	0.3846	0.4738	0.3757	0.5488	1.0000

4.2 Empirical Results

Regression results for the period 1993-2013

Table 8. Regression results for the period 1993-2013. The following regressions are estimated for the market model and Fama-French three-factor model respectively:

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + \varepsilon_{pt}$$

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + s_p (SMB) + h_p (HML) + \varepsilon_{pt}$$

The Gibbons et al. (1989) (GRS) test statistic testing whether $\alpha_p = 0$, is also reported. * and ** denote significance at the 1% and 5% levels, respectively.

Explanatory variable	Dependent variable	α	β	s	h	t(α)	t(β)	t(s)	t(h)	R^2
MKT	S/L	0.0078	0.8712	—	—	2.2146**	21.4668*	—	—	0.6594
	S/M	0.0069	0.8762	—	—	1.8714	20.7163*	—	—	0.6433
	S/H	0.0271	0.8621	—	—	3.9379*	10.9096*	—	—	0.3334
	B/L	-0.0074	0.8358	—	—	-3.1455*	31.1034*	—	—	0.8025
	B/M	-0.0091	0.9524	—	—	-3.8671*	35.1139*	—	—	0.8382
	B/H	-0.0041	1.0321	—	—	-1.0725	23.4985*	—	—	0.6988
	GRS statistic		12.3322			P value		Less than 0.01		
MKT+SMB+HML	S/L	-0.0078	0.9658	0.9233	-0.3180	-2.7985*	32.0821*	14.9700*	-6.9067*	0.8253
	S/M	-0.0079	0.9096	0.6426	0.1253	-2.4280**	25.9208*	8.9387*	2.3349**	0.7711
	S/H	-0.0107	0.8758	1.3474	0.8660	-3.9527*	29.9824*	22.5170*	19.3871*	0.9151
	B/L	-0.0090	0.8573	0.1440	-0.1209	-3.5669*	31.4716*	2.5810**	-2.9022*	0.8109
	B/M	-0.0113	0.9466	0.0494	0.0990	-4.4293*	34.4251*	0.8767	2.3542**	0.8450
	B/H	-0.0061	0.9474	-0.2801	0.6952	-1.9304	27.7283*	-4.0019*	13.3063*	0.8301
	GRS statistic		4.3744			P value		0.0003		

Regression results for the two ten-year sub-periods

Results for the period 1993-2003

Table 9. Regression results for the period 1993-2003. The following regressions are estimated for the market model and Fama-French three-factor model respectively:

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + \varepsilon_{pt}$$

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + s_p (SMB) + h_p (HML) + \varepsilon_{pt}$$

The Gibbons et al. (1989) (GRS) test statistic testing whether $\alpha_p = 0$, is also reported. * and ** denote significance at the 1% and 5% levels, respectively.

Explanatory variable	Dependent variable	α	β	s	h	t(α)	t(β)	t(s)	t(h)	R^2
MKT	S/L	0.0054	0.8196	—	—	1.0391	13.6697*	—	—	0.6129
	S/M	0.0040	0.7524	—	—	0.7253	11.8311*	—	—	0.5426
	S/H	0.0277	0.6657	—	—	2.6665*	5.5857*	—	—	0.2091
	B/L	-0.0081	0.7361	—	—	-2.1151**	16.8359*	—	—	0.7061
	B/M	-0.0101	0.8709	—	—	-2.7774*	20.7648*	—	—	0.7851
	B/H	-0.0048	0.9100	—	—	-0.8194	13.4396*	—	—	0.6049
	GRS statistic		4.7546				P value	0.0002		
MKT+SMB+HML	S/L	-0.0082	0.9014	0.8500	-0.2648	-1.9283	19.4325*	9.3823*	-3.9012*	0.7804
	S/M	-0.0100	0.8075	0.6078	0.1426	-2.0647**	15.3895*	5.9306*	1.8578	0.7048
	S/H	-0.0083	0.7703	1.2210	0.9065	-1.9379	16.4801*	13.3745*	13.2543*	0.8847
	B/L	-0.0078	0.7424	0.0564	-0.1051	-1.9166	16.7180*	0.6499	-1.6181	0.7126
	B/M	-0.0110	0.8634	-0.0630	0.1658	-2.8596*	20.6990*	-0.7733	2.7171*	0.7986
	B/H	-0.0077	0.8735	-0.3146	0.7236	-1.6267	16.9200*	-3.1201*	9.5801*	0.7823
	GRS statistic		1.4380				P value	0.2065		

Results for the period 2003-2013

Table 10. Regression results for the period 2003-2013. The following regressions are estimated for the market model and Fama-French three-factor model respectively:

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + \varepsilon_{pt}$$

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + s_p (SMB) + h_p (HML) + \varepsilon_{pt}$$

The Gibbons et al. (1989) (GRS) test statistic testing whether $\alpha_p = 0$, is also reported. * and ** denote significance at the 1% and 5% levels, respectively.

Explanatory variable	Dependent variable	α	β	s	h	t(α)	t(β)	t(s)	t(h)	R^2
MKT	S/L	0.0101	0.9222	—	—	2.1232*	16.8957*	—	—	0.7075
	S/M	0.0094	0.9998	—	—	2.0246**	18.7054*	—	—	0.7478
	S/H	0.0259	1.0601	—	—	2.9355*	10.4473*	—	—	0.4805
	B/L	-0.0070	0.9361	—	—	-2.7983*	32.7782*	—	—	0.9010
	B/M	-0.0084	1.0340	—	—	-2.9187*	31.4498*	—	—	0.8934
	B/H	-0.0037	1.1548	—	—	-0.7923	21.3683*	—	—	0.7946
	GRS statistic		10.2533				P value	Less than 0.01		
MKT+SMB+HML	S/L	-0.0078	1.0433	1.0154	-0.4084	-2.2435**	27.4177*	12.5095*	-6.6796*	0.8766
	S/M	-0.0059	1.0208	0.6854	0.0654	-1.4180	22.4041*	7.0522*	0.8936	0.8409
	S/H	-0.0141	0.9930	1.5169	0.7810	-4.7885*	30.9363*	22.1532*	15.1451*	0.9549
	B/L	-0.0109	0.9806	0.2628	-0.1795	-4.2706*	35.3131*	4.4361*	-4.0234*	0.9188
	B/M	-0.0124	1.0457	0.1937	-0.0135	-3.9513*	30.6382*	2.6600*	-0.2470	0.9003
	B/H	-0.0046	1.0309	-0.2387	0.6311	-1.1226	23.0310*	-2.5000**	8.7765*	0.8777
	GRS statistic		4.3082				P value	0.0006		

Regression results for the four five-year sub-periods

Results for the period 1993-1998

Table 11. Regression results for the period 1993-1998. The following regressions are estimated for the market model and Fama-French three-factor model respectively:

$$(R_{p,t}) - R_f = \boldsymbol{\alpha}_{p,t} + \boldsymbol{\beta}_p (R_{mt} - R_f) + \boldsymbol{\varepsilon}_{pt}$$

$$(R_{p,t}) - R_f = \boldsymbol{\alpha}_{p,t} + \boldsymbol{\beta}_p (R_{mt} - R_f) + s_p (SMB) + h_p (HML) + \boldsymbol{\varepsilon}_{pt}$$

The Gibbons et al. (1989) (GRS) test statistic testing whether $\boldsymbol{\alpha}_p = 0$, is also reported. * and ** denote significance at the 1% and 5% levels, respectively.

Explanatory variable	Dependent variable	α	β	s	h	t(α)	t(β)	t(s)	t(h)	R^2
MKT	S/L	0.0029	0.8966	—	—	0.3671	9.4967*	—	—	0.6086
	S/M	-0.0036	0.7949	—	—	-0.4449	8.1894*	—	—	0.5362
	S/H	0.0195	0.4962	—	—	1.1630	2.4697*	—	—	0.0952
	B/L	-0.0013	0.7217	—	—	-0.2991	14.0460*	—	—	0.7728
	B/M	-0.0119	0.9105	—	—	-3.4386*	21.9158*	—	—	0.8923
	B/H	-0.0168	0.9573	—	—	-2.3983**	11.4229*	—	—	0.6923
	GRS statistic		4.1963				P value	0.0016		
MKT+SMB+HML	S/L	-0.0132	0.9960	1.0027	-0.4229	-2.6569**	17.3617*	10.2394*	-4.8119*	0.8653
	S/M	-0.0157	0.8900	0.7459	-0.0587	-2.4586**	12.0456*	5.9145*	-0.5187	0.7496
	S/H	-0.0017	0.7470	1.2706	0.9779	-0.3818	14.4890*	14.4395*	12.3822*	0.9445
	B/L	-0.0029	0.7295	0.1024	-0.0715	-0.6401	13.8747*	1.1415	-0.8876	0.7783
	B/M	-0.0133	0.9248	0.0821	0.0400	-3.6928*	22.2199*	1.1563	0.6275	0.8992
	B/H	-0.0144	0.9786	-0.1655	0.5278	-2.3226**	13.6594*	-1.3532	4.8087*	0.7904
	GRS statistic		2.9050				P value	0.0163		

Results for the period 1998-2003

Table 12. Regression results for the period 1998-2003. The following regressions are estimated for the market model and Fama-French three-factor model respectively:

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + \varepsilon_{pt}$$

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + s_p (SMB) + h_p (HML) + \varepsilon_{pt}$$

The Gibbons et al. (1989) (GRS) test statistic testing whether $\alpha_p = 0$, is also reported. * and ** denote significance at the 1% and 5% levels, respectively.

Explanatory variable	Dependent variable	α	β	s	h	t(α)	t(β)	t(s)	t(h)	R^2
MKT	S/L	0.0093	0.7453	—	—	1.3411	9.7734*	—	—	0.6222
	S/M	0.0127	0.6969	—	—	1.6739	8.3325*	—	—	0.5449
	S/H	0.0337	0.7973	—	—	2.7708*	5.9364*	—	—	0.3780
	B/L	-0.0154	0.7646	—	—	-2.4341**	10.9487*	—	—	0.6739
	B/M	-0.0077	0.8316	—	—	-1.1682	11.4653*	—	—	0.6939
	B/H	0.0085	0.8404	—	—	0.8945	8.0609*	—	—	0.5284
	GRS statistic		4.5474				P value	0.0009		
MKT+SMB+HML	S/L	-0.0031	0.7979	0.6690	-0.1359	-0.4194	11.2966*	3.8348*	-1.3369	0.7009
	S/M	-0.0066	0.7111	0.5112	0.3030	-0.8596	9.7584*	2.8403*	2.8883*	0.6811
	S/H	-0.0113	0.8085	1.0201	0.8733	-1.4089	10.6606*	5.4459*	7.9993*	0.8169
	B/L	-0.0106	0.7657	-0.0913	-0.1118	-1.4009	10.7202*	-0.5177	-1.0873	0.6852
	B/M	-0.0081	0.7966	-0.2660	0.2733	-1.0767	11.2536*	-1.5212	2.6818*	0.7309
	B/H	-0.0024	0.7551	-0.4424	0.8789	-0.3192	10.5550*	-2.5036**	8.5334*	0.7950
	GRS statistic		0.5225				P value	0.7886		

Results for the period 2003-2008

Table 13. Regression results for the period 2003-2008. The following regressions are estimated for the market model and Fama-French three-factor model respectively:

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + \varepsilon_{pt}$$

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + s_p (SMB) + h_p (HML) + \varepsilon_{pt}$$

The Gibbons et al. (1989) (GRS) test statistic testing whether $\alpha_p = 0$, is also reported. * and ** denote significance at the 1% and 5% levels, respectively.

Explanatory variable	Dependent variable	α	β	s	h	t(α)	t(β)	t(s)	t(h)	R^2
MKT	S/L	0.0094	0.8938	—	—	1.1448	9.7667*	—	—	0.6219
	S/M	0.0109	0.8940	—	—	1.3309	9.8474*	—	—	0.6257
	S/H	0.0261	0.9408	—	—	2.5068**	8.1160*	—	—	0.5318
	B/L	-0.0128	0.9213	—	—	-3.3010*	21.4030*	—	—	0.8876
	B/M	-0.0071	0.8960	—	—	-1.4873	16.9248	—	—	0.8316
	B/H	0.0034	0.9896	—	—	0.4203	10.9017	—	—	0.6720
	GRS statistic		7.1728				P value		Less than 0.01	
MKT+SMB+HML	S/L	-0.0134	0.9348	1.2139	-0.1614	-2.4789**	17.7281*	11.0349*	-1.5792	0.8809
	S/M	-0.0178	0.8982	1.0499	0.4020	-3.3686*	17.4181*	9.7585*	4.0228*	0.8854
	S/H	-0.0149	0.9429	1.4667	0.6272	-3.3671*	21.7419*	16.2109*	7.4622*	0.9378
	B/L	-0.0170	0.9369	0.3051	-0.1328	-4.2460*	23.9276*	3.7346*	-1.7502	0.9118
	B/M	-0.0136	0.9102	0.3731	-0.0781	-2.7313*	18.6572*	3.6657*	-0.8257	0.8643
	B/H	-0.0154	0.9288	0.0523	1.0787	-2.7934*	17.1885*	0.4636	10.3011*	0.8897
	GRS statistic		3.5679				P value	0.0050		

Results for the period 2008-2013

Table 14. Regression results for the period 2008-2013. The following regressions are estimated for the market model and Fama-French three-factor model respectively:

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + \varepsilon_{pt}$$

$$(R_{p,t}) - R_f = \alpha_{p,t} + \beta_p (R_{mt} - R_f) + s_p (SMB) + h_p (HML) + \varepsilon_{pt}$$

The Gibbons et al. (1989) (GRS) test statistic testing whether $\alpha_p = 0$, is also reported. * and ** denote significance at the 1% and 5% levels, respectively.

Explanatory variable	Dependent variable	α	β	s	h	t(α)	t(β)	t(s)	t(h)	R^2
MKT	S/L	0.0111	0.9556	—	—	2.1971**	15.8717*	—	—	0.8128
	S/M	0.0094	1.1160	—	—	2.1008**	20.9219*	—	—	0.8830
	S/H	0.0273	1.1941	—	—	1.9179	7.0446*	—	—	0.4611
	B/L	-0.0011	0.9650	—	—	-0.3530	27.0899*	—	—	0.9268
	B/M	-0.0078	1.1868	—	—	-3.2460*	41.7739*	—	—	0.9678
	B/H	-0.0085	1.3257	—	—	-2.0260**	26.4804*	—	—	0.9236
	GRS statistic		6.5055				P value		Less than 0.01	
MKT+SMB+HML	S/L	-0.0071	1.1949	0.9523	-0.5742	-1.9898	27.7608*	9.9456*	-8.9842*	0.9367
	S/M	0.0008	1.1666	0.4120	-0.0720	0.1592	19.6690*	3.1226*	-0.8177	0.9042
	S/H	-0.0102	1.0559	1.5600	0.8292	-2.7102*	23.1549*	15.3787*	12.2461*	0.9742
	B/L	-0.0057	1.0478	0.2564	-0.2158	-1.7632	26.8112*	2.9498*	-3.7194*	0.9416
	B/M	-0.0082	1.1828	0.0191	0.0179	-2.8744*	34.0287*	0.2474	0.3477	0.9681
	B/H	-0.0026	1.1868	-0.3513	0.3808	-0.6064	23.2377*	-3.0916*	5.0217*	0.9474
	GRS statistic		2.2280				P value	0.0551		

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Select Macro-Economic Variables and CNX 500: Long-run and Short-run Relationship in Indian Market

Gopinathan Radhika and Ramachandran Azhagaiah

Abstract

The study used time series data to analyze long-run as well as short-run relationship between select macro-economic variables and CNX 500. The monthly data were collected from 2005-06 to 2014-15. The study showed that crude oil price, gold price and foreign exchange reserves have both long-run as well as short-run relationship with CNX 500 while silver price, weighted average call money rate, wholesale price index, index of industrial production, index of service production and money supply have no long-run as well as short-run relationship with CNX 500.

Keywords: *Macro-economic variables, stationary test, co-integration, long-run and short-run relationship, vector error correction model.*

JEL Classification: O11, C22, E44, C58

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In India, stock market (SM) is widely supported to economic growth and development, which has a direct relationship with the financial sector. It is an important segment of the financial system of any developing country like India as it plays an important role in channelizing savings from deficit sector to surplus sector. The stock market has always been an area of serious concern for policy makers, economists and researchers. It is often defined as the barometer of any economy because it reflects the change and direction of pressure on the economy. The movement and volatility in stock market often reflects the direction of any economy.

Further, the movement of stock indices is highly sensitive to the changes in fundamentals of the economy and to the changes in expectations about future prospects. Expectations are influenced by the micro viz. consumer demand theory, production theory etc., and macro fundamentals viz. economic, political and monetary factors which may be formed either rationally or adaptively on economic fundamentals, as well as by many subjective factors viz.

micro and macro variables which are unpredictable and also non-quantifiable. At present, the SM movement in India is viewed and analyzed carefully by large number of global players. Understanding macro dynamics of Indian stock market may be useful for policy makers, traders and investors.

Macro-economic Variables

Macro-economic variables are those that control the macro-economy, and also study of government policy meant to control and stabilize the economy over time, that is to reduce fluctuations in the economy that can be brought by inflation, fall in value of the local currency and high levels of unemployment in the country.

The changes in macro-economic variables and expectations affect the stock returns intensively. The domestic economic conditions are the important determinants of the stock market development. However, the global events and the policies of the developed countries along with domestic economic variables can also bring changes in the domestic stock market because of globalization. Thus, the macro-economic variables impact the economy of a country in aggregate terms, which in turn affect all the sectors.

Review of Literature

Maku and Atanda (2010) examined critically the long-run relationship between five selected macro-economic variables viz. *exchange rate, consumer price index, money supply, treasury bill, real output growth and* SM of Nigeria from 1984 to 2007. The Augmented Engle Granger Co-integration test result revealed that the SM performance in Nigeria was mainly determined by macro-economic variables in the long-run, however the index of NSE is more responsive to the changes in *exchange rate, consumer price index, money supply, and real output growth.*

Kumar (2011) examined the causal relationship between stock prices and macro-economic variables in India employing unit-root test, co-integration and the Granger causality test to analyze the relationship between macro-economic variables and the NSE Index Nifty using monthly data from 1st April 2006 to 31st March 2010. The study indicated that *Nifty* and *WPI* were co-integrated in the long-run, however all the other variables viz. *real effective economic rate, foreign exchange reserve, balance of trade, foreign direct investment, index of industrial production* and *Nifty* were not co-integrated in the long- run.

Abid *Collins et al.* (2012) analyzed the long-run and short-run relationship between the Karachi SM index and a set of macro-economic variables viz. *inflation, exchange rate and interest rate* from January 2003 to April 2009. The Auto Regressive Distributed Lag technique was used to find the long-run co-integration. Ordinary Least Square regression and Vector Error Correction technique and Granger Casualty test were also applied. The study showed that long-run co-integration existed between stock prices and the macro-economic variables in the Karachi SM. The Vector Error Correction Model showed that the SM had short-run relationship with *interest rates and exchange rates*.

Osamwonyi and Evbayiro-Osagie (2012) attempted to determine the relationship between macro-economic variables and the Nigerian SM index. The study considered the yearly data of six selected macro-economic variables viz. *interest rates, inflation rates, exchange rates, fiscal deficit, GDP and money supply* for the period from 1975 to 2005; and it revealed the relative influence of these variables on the 'All Share Index' of the Nigerian SM. The Vector Error Correction Model showed that macro-economic variables have influenced the SM index in Nigeria.

Osisanwo and Atanda (2012) examined the determinants of stock market returns in Nigeria using the ordinary least square method obtained from the Central Bank of Nigeria (CBN) for the period from 1984 to 2010. The study showed that all the selected macro-economic variables viz. *log of exchange rate, consumer price index, interest rate, broad money supply, growth rate* and *real per capita income* incorporated were found to be simultaneously significant at 5% level. The study showed that *interest rate, previous stock market return levels, money supply* and *exchange rate* were the main determinants of stock market returns in Nigeria.

Vejzagic and Zarafat (2013) examined the long-term equilibrium relationship between selected macro-economic variables and the Financial Time Stock Exchange (FTSE) Bursa Malaysia Hijrah Shariah Index. The study used co-integration vector error correction model, vector auto regression to evaluate the relationship between macro-economic variables viz. *interest rate, money supply, consumer price index, and exchange rate* and FTSE Bursa Malaysia Hijrah Shariah Index from 2006 to 2012. The study showed that there was a significant relationship between *interest rate, exchange rate* and *money supply* and FTSE

Bursa Malaysia Hijrah Shariah Index negatively affected the *interest rate* and *exchange rate* while it positively affected the *money supply* in disequilibrium.

Subburayan and Srinivasan (2014) explored the effect of macro-economic variables on stock return of the CNX Bank index. The study investigated the long-run relationship between macro-economic variables viz. *exchange rate, interest rate and inflation rate* and *CNX bank returns*. The *interest rate* and *exchange rate* were crucial variables in the banking industry and monetary policy. The study used monthly data collected from Reserve Bank of India (RBI) and Nifty bank from 1st Janurary 2004 to 31st December 2013. The study used Augmented Dickey Fuller (ADF), Regression, Co-integration test and Granger causality test. The study found that selected macro-economic variables had a significant relationship with bank stock returns and bank stock returns have fixed long-run relationship with the macro-economic variables; *exchange rate* and *interest rate* shown a positive relationship with the bank stock returns; there is no causal linkage between CNX Bankex and Interest rate; CNX Bankex and inflation.

Sukruoglul and Nalin (2014) examined the effects of macro-economic variables viz. *gross domestic product, turnover ratio, monetization ratio, savings rate, inflation rate* and SM in selected European countries by estimating a dynamic panel data for the period from 1995 to 2011. The study found that *income, monetization ratio, liquidity ratio, saving rate* and *inflation* had effect on the SM development. *Monetization ratio* and *inflation* had negative effect while *income; liquidity ratio* and *savings rate* had positive effect on the SM development.

Ahmad *Collins et al.* (2015) analyzed the dynamic interaction between the selected macro-economic variables viz. *91 days Treasury bill rate (a proxy for interest rate), crude oil price, consumer price index (a proxy for inflation), exchange rate* and *SM returns* in Nigeria for the period from 1970 to 2013 using F-Bound Co-integration and Todayamamoto Causality tests that are robust to structural breaks. The result of Autoregressive Distribution Lag (ARDL) showed that Zivot Andrew unit root test indicated that all the variables were non stationary at level but stationary at first difference. The result indicated that co-integration existed among the variables. Granger causality Test showed that there was a strong evidence of uni-directional causality from *per capita income, inflation* to *SM returns gross domestic per capita income* and *inflation* together caused the SM returns.

Kganyago and Gumbo (2015) examined the long-run relationship between *money market interest rates and stock market returns* in Zimbabwe for the period from April 2009 to December 2013. The study used Augmented Dickey-Fuller test, Johansen co-integration test, Vector Error Correlation and Granger causality test, which showed that there was a statistically significant inverse causal relationship between *money market interest rates* and *stock returns*; short-run causality between *stock returns* and *money market interest rates*.

Review of previous studies brings out a numerous and varied findings about the casual relationship between macro-economic variables and stock retun viz. Vejzagic and Zarafat (2013), Osamwonyi and Evbayiro-Osagie (2012), Maysami *et al.* (2004), Kumar (2011), Singh (2010), Ray (2012) and Parmar (2013). However, only very few studies viz. Sohail and Hussian (2009), Abid *Collins et al.* (2012), Naik and Padhi (2012) concentrated about short-run and long-run relationship between macro-economic variables and stock return. Hence, the subject of financial market in developing countries like India still needs a lengthy analysis and more research attention. Accordingly, the present study has been attempted to bring out the short-run and long-run relationship between macro-economic variables and stock return.

Objectives of the Study

1. To study the long-run relationship between the selected macro-economic variables and CNX 500.
2. To examine the short-run relationship between the selected macro-economic variables and CNX 500.

Research Methodology

The study used time series data to analyze the short-run as well as long-run relationship between the selected macro-economic variables viz. *index of industrial production, money supply, wholesale price index, gold price, silver price, index of service production, weighted average call money rate, crude oil price, exchange rate, foreign exchange reserves* and CNX 500. Monthly data were collected for the period from April 2005 to March 2015 for the selected macro-economic variables from the database of Indian economy of Reserve Bank of India and historical data of

National Stock Exchange. The raw data have been converted into log data as the original data showed non-linear.

Hypotheses of the Study

An increasing amount of empirical studies had been focused attention to relate the macro-economic variables and stock prices. The ability of Granger causality, co-integration and Vector error correction model are used to exploring the short-run and long-run relationship between macro-economic variables and stock return after financial crisis has been validated in numerous studies. For instance, Maysami *et al.* (2004), Al-Sharkas (2004), Kumar (2011), Singh (2010), Ray (2012), Naik and Padhi (2012), Parmar (2013), Sohail and Hussian (2009), Abid *Collins et al.* (2012), and Maku and Akanda (2010) showed the evidence that there was the presence of a short-run and long-run relationship between macro-economic variables and stock return. Hence, the hypotheses are:

- H_0^1: There is no long-run relationship between the *crude oil price, gold price, foreign exchange reserves* and *CNX 500*.
- H_0^2: There is no long-run relationship between *exchange rate* and *CNX 500*.
- H_0^3: There is no long-run relationship between *silver price* and *CNX 500*.
- H_0^4: There is no long-run relationship between *index of industrial production, index of service production, money supply* and *CNX 500*.
- H_0^5: There is no long-run relationship between *weighted average call money rate, wholesale price index* and *CNX 500*.
- H_0^6: There is no short-run relationship between the *crude oil price, gold price, foreign exchange reserves* and *CNX 500*.
- H_0^7: There is no short-run relationship between *exchange rate* and *CNX 500*.
- H_0^8: There is no short-run relationship between *silver price* and *CNX 500*.
- H_0^9: There is no short-run relationship between *index of industrial production, index of service production, money supply* and *CNX 500*.

  H_0^{10}: There is no short-run relationship between *weighted average call money rate, wholesale price index* and *CNX 500*.

Research Methods

Augmented Dickey – Fuller (ADF) Test

One of the most popular tests and is the extension of Dickey – Fuller test called ADF test entails regressing the first difference of a variable y on its lagged level, exogenous variables and k lagged first differences:

$$\Delta Y_t = \beta_1 + \gamma Y_{t-1} + \sum_{i=1}^{n} \delta \Delta Y_{t-1} + \varepsilon_t \qquad (1)$$

Where, Y_t - IIP, ISP, WPI, ER, WACMR, FER, MS, GP, SP, COP,1b,g and d are coefficients; t1Y- is the stochastic trend; n is the appropriate lag length;

Phillips Perron (PP) test

PP test Peter C. B. Phillips and Pierre Perron (1988) is a unit root test, which is used in time series analysis to test the null hypothesis that a time series is integrated of order 1. The PP test differs from the ADF test mainly in how it deals with higher-order serial correlation and heteroscedasticity in the error terms. The PP test is free from parametric errors and it allows the disturbances to be weakly dependent and heterogeneously distributed. Therefore, PP test is also applied to check the stationarity of data used. The test equation for the PP test is:

$$\Delta Y_t = \alpha_1 + \gamma Y_{t-1} + \alpha_2 (t - T/2) + \sum_{i=1}^{m} \Theta_i \Delta Y_{t-1} + \mu_{2t} \qquad (2)$$

Where, γ_t - IIP, ISP, WPI, ER, WACMR, FER, MS, GP, SP, COP, α_1, γ and δ are coefficients; ΔY_t is the first difference operator; T is the sample size; μ_{2t} is the covariance stationary random error term; lag length m was decided according to Newly & West (1987), suggestions using Bartlett Kernel.

Co-integration test

Co-integration test is used to identify equilibrium or a long-run relationship among the variables. This technique uses a maximum likelihood method to determine the number of co-integrating vectors in non-stationary time series with imposed restrictions. In the presence of long-run relationship among the variables, the divergence from equilibrium path was bound to make the presence of co-integration among the variables in the long-run (Johansen and Juseliskk, 1990). The Johansen method is used to explore the long-run relationship among the variables which is explicated as under:

$$Z_t = a_0 + \sum_{i=1}^{n} a_j Z_{t-j} + e_t \quad \ldots\ldots\ldots \qquad (3)$$

Where,

a_0 = vector of constants $(n \times 1)$

Z_t = vector of non-stationary variables $(n \times 1)$

n = the no. of lags

a_j = coefficients matrix $(n \times n)$

e_t = vector of error terms $(n \times 1)$

Vector Error Correction Model (VECM)

The VECM model is a restricted VAR that has co-integration restrictions built into the specification, so that it is designed for use with non-stationary series that are known to be co-integrated. The VECM specification restricts the long-run behavior of the endogenous variables to converge to their co-integrating relationship while allowing a wide range of short-run dynamics.

The VECM is based on:

$$\Delta Y_t = \beta_0 + \beta_1 e_{t-1} + \sum_{i=1}^{m} \beta_i \Delta Y_{t-i} + \sum_{j=1}^{n} \beta_j \Delta X_{t-j} + \varepsilon_t \qquad (4)$$

Where, t1e-means the error-correction term lagged one period achieved from the co-integration equation. It will capture the speed of the short-run adjustments towards the long-run equilibrium.

Variables used for the Study

Dependent Variable

CNX 500

The CNX 500 is India's first broad based benchmark of the Indian capital market, which represents about 95.77% of the free float market capitalization of the stocks listed on NSE as on March 31, 2015. The value of total stock traded for the last six months ending March 2015, of all Index constituents is about 91.97% of the traded value of all the stocks on NSE.

Independent Variables

Index of Industrial Production (IIP)

Index of industrial production (IIP) is used as proxy to measure the growth rate in real sector. The IIP presents a measure of overall economic activity in the economy, which affects stock price through its influence on expected future cash flow. Thus, it is obvious that an increase in industrial production will have a positive impact on the stock price because increase in IIP results in increase in production of industrial sector, in turn, it leads to increase in the profit of industries.

Money Supply (M2)

An increase in money supply would indicate excess liquidity available for buying securities, resulting in higher security price. Therefore, a positive relationship is expected between money supply and stock return.

Wholesale Price Index (WPI)

A rise in prices of several items indicates that the input prices for production of various goods and services are rising. In these cases, market analysts and fund managers will always consider the net impact on the margin of the entity that they are tracking. If a firm is able to sustain its profit margin despite high inflation, the stock price is likely to hold. If the high inflation sustains, at some stage, it will lead to a chain reaction across the economy, pushing up interest rates thereby affecting demand.

Gold Price (GP)

Gold is a substitute investment avenue for the investors more particularly the Indians. As the gold price rises, Indian investors tend to invest less in stocks, causing stock prices to fall. Therefore, a negative relationship is expected between gold price and stock price.

Silver Price (SP)

Silver is used as one of the investment avenues for the investors more particularly the Indians. Increase in silver price attracts investors towards the commodity market, which might decrease the investors' preference towards equity market. This indicates that a negative relationship is expected between silver and stock price.

Index of Service Production (ISP)

Index of service production (ISP) is a reliable indicator of short-term changes in value added in the private service sector of the economy. The index reflects the growth rate of service sector of the economy. Positive relationship is expected between ISP and stock return.

Weighted Average Call Money Rate (WACMR)

The WACMR may have an influence on stock market due to possible volatility linkages between capital market and money market, arising from two distinct sources viz. common information that affects expectation across markets and information spill over on account of cross market hedging activities (**Fleming** *et al*., **1998**).

Crude Oil Price (COP)

India is a major oil importing country and the price rise in crude oil virtually impacts industries and businesses across the wide-ranging increase in oil price directly adds to the operational costs, fuel costs, transportation costs, etc. This, in turn, it may affect profitability since upward revision of output price generally takes time and typically occurs after rise in cost of fuel (**Bhattacharya** and **Dasa**, **2014**).

Exchange Rate (ER)

A depreciation of the domestic currency against foreign currencies increases export, therefore exchange rate (ER) may have a negative relationship with the stock return. However, depreciation of domestic currency increases the cost of imports which indicates a positive relationship between exchange rate and stock return. Hence, the relationship between exchange rate and stock return needs to be checked.

Foreign Exchange Reserves (FER)

Uncertainty about access to capital market also persuades the level of foreign currency reserves, which Reserve Bank of India holds. Access to capital market can be cut off because a India's credit rating falls or the market itself is short of liquidity. In these circumstances, the RBI can be pressed into drawing on international reserves. Hence, it is expected that foreign exchange reserves has positive impact on stock price.

Equation Model

$$Log\ CNX\ 500 = \alpha + \beta_1 log\,(COP) + \beta_2 log\,(ER) + \beta_3 log\,(FER) + \beta_4 log\,(GP) + \beta_5 log\,(SP) + \beta_6 log\,(IIP) + \beta_7 log\,(ISP) + \beta_8 log\,(WACMR) + \beta_9 log\,(WPI) + \beta_{10} log\,(MS) + \epsilon$$

Long-run and short-run relationship between Macro-economic Variables and CNX 500 - Analysis

Table 1 shows the results of unit root test. The stationarity of the data series has been established by the standard procedure of unit root by employing Augmented Dickey fuller (ADF) and Phillips Perron (PP) tests. On the basis of the test results, the data series are found to be non-stationary for all the variables. However, after taking the first difference these variables are found to be stationary at 1% level. Thus, the variables viz. CNX 500, IIP, ISP, GP, SP, WACMR, WPI, MS, ER, COP, FER are individually integrated of the order I(1).

Table 1 Results of unit root test for the Selected Variables

Variables	ADF unit root test			Phillips Perron test		
	t- statistics	**Prob.**	**Order of integration**	**t- statistics**	**Prob.**	**Order of integration**
CNX 500	-9.867765*	0.0000	I(1)	-9.926825*	0.0000	I(1)
IIP	-7.793243*	0.0000		-21.42578*	0.0000	
ISP	-10.48245*	0.0000		-30.41621*	0.0001	
GP	-10.42717*	0.0000		-10.46236*	0.0000	
SP	-8.018572*	0.0000		-8.348098*	0.0000	
WACMR	-10.04603*	0.0000		-34.37729*	0.0001	
WPI	-10.80202*	0.0000		-10.81576*	0.0000	
MS	-11.61108*	0.0001		-10.97533*	0.0000	
ER	-8.720045*	0.0000		-8.796873*	0.0000	
COP	-7.474664*	0.0000		-7.577303*	0.0000	
FER	-9.408372*	0.0000		-9.373833*	0.0000	
Test critical values:						
1 % level	-2.886732			-3.488063		
5% level	-2.580281			-2.886732		
10% level	-2.579931			-2.580281		

Source: Computed results based on secondary data compiled from NSE and RBI websites.

* Significant at 1% level. [Note: IIP – Index of Industrial Production, ISP – Index of Service Production, GP - Gold Price, SP – Silver Price, WACMR- Weighted Average Call Money Rate, WPI - Wholesale Price Index, MS - Money Supply, ER - Exchange Rate, COP – Crude Oil Price,

Table 2 Results of Lag Length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	611.3463	NA	2.40e-19	-11.65721	-11.37583	-11.54324
1	1767.448	2042.820	4.53e-28	-31.75627	-28.37972*	-30.38865
2	1864.350	150.5269	7.78e-28	-31.28834	-24.81663	-28.66708
3	1990.422	168.9124	8.60e-28	-31.38683	-21.81995	-27.51192
4	2150.832	180.6565	6.03e-28	-32.15208	-19.49004	-27.02352
5	2351.789	183.3976	2.71e-28	-33.70465	-17.94743	-27.32244
6	2591.525	167.5824	1.01e-28	-36.01020	-17.15782	-28.37434
7	2888.373	144.1009	3.49e-29	-39.42472	-17.47717	-30.53521
8	3514.620	**170.2418***	**2.06e-31***	**-49.23533***	-24.19262	**-39.09218***

Source: Computed results based on secondary data compiled from NSE and RBI websites.

* indicates lag order selected by the criterion

LR : Sequential modified LR test statistic (each test at 5% level)

FPE : Final prediction error

AIC : Akaike information criterion

SC : Schwarz information criterion

HQ : Hannan-Quinn information criterion

Table 3 Results of Normalized Co-integrating Coefficients

CNX 500 (-1)	COP (-1)	ER (-1)	FER (-1)	GP (-1)	SP (-1)	IIP (-1)	ISP (-1)
1.000	-0.369101	-0.433393	1.365176	-0.132503	0.121049	-1.989986	-1.264383
	(0.01343)	(0.06281)	(0.07507)	(0.03412)	(0.02402)	(0.11738)	(0.21122)
	[-27.4794]	[-6.89960]	[18.1846]	[-3.88320]	[5.03915]	[-16.9536]	[-5.98618]
	WACMR (-1)	**WPI (-1)**	**MS (-1)**				
	0.221242	0.096457	-0.388793				
	(0.01945)	(0.00597)	(0.03656)				
	[11.3761]	[16.1556]	[-10.6347]				

Source: Computed results based on secondary data compiled from NSE and RBI websites.
Notes: Standard error in () and t- statistics [].

Table 3 shows the results of normalized co-integrating coefficient. The crude oil price (COP) (-0.3691) showed negative relationship with CNX 500 in long-run whereas increase in crude oil price increases the cost of production, which might decrease profit of firms, hence decreases the stock return, so the expected relationship between crude oil price and stock return is negative. The FER (1.365176) has a positive relationship with CNX 500; GP (-0.132503) has a negative relation with CNX 500 in long-run, which indicates that the gold price attracts investors towards the commodity market, which might decrease investors' preference towards equity market. Therefore, H_0^1 "*there is no long-run relationship between the crude oil price, gold price, foreign exchange reserves and CNX 500*" is rejected.

The results of gold price are consistent with the results of Patel (2012), Sangami and Hassan (2012), Ray (2012) and Venkatraja (2014), however they are contrary to Bhanu Sireesha (2013), Parmar (2013) and Singh (2014). The results of crude oil price is consistent with Patel (2012), Kuwornu (2012), Ray (2012), Ahmad *Collins et al.* (2015) and Hosseini *et al.* (2011), however, they are contrary to Parmar (2013), Singh (2014). The results of foreign exchange reserves are consistent with Ray (2012), Srivastava (2010), Olufisayo Akinlo (2015) and Sharma and Mahendru (2010).

The exchange rate showed negative relation (-0.4333) with CNX 500, thus a depreciation of the domestic currency against foreign currencies increases export in the long-run. Hence, H_0^2 "*there is no long-run relationship between exchange rate and CNX 500*" is rejected. The ER results are consistent with Singh (2010), Naik and Padhi (2012) however, they are contrary to Kumar (2011), Patel (2012) and Parmar (2013). The results of SP (0.1210) showed a significant positive relation with CNX 500 in the long-run. Therefore, H_0^3 "*there is no long-run relationship between silver price and CNX 500*" is accepted, thus the SP does not attract investors towards investment in the commodity market during the study period.

The IIP (-1.9899), ISP (-1.2643) and MS (-0.3888) have a negative relationship with CNX 500 in the long-run. However, H_0^4 "*there is no long-run relationship between index of industrial production, index of service production, money supply and CNX 500*" is accepted thus IIP and ISP do not reflect the growth rate and service sector industries over the study period.

The results of IIP are consistent with Ray (2012), Sabunwala (2012), Srivastava (2010) and Al-Sharkas (2004), however they are contrary to Singh (2010), Naik and Padhi (2012), Patel (2012), Sangami and Hassan (2013), Sohail and Hussain (2009) and Venkatraja (2014). The results of MS are consistent with Ray (2012), Patel (2012), Bhanu Sireesha (2013), however they are contrary to Maku and Akanda (2010), Vejzagic and Zarafat (2013), Mohanamani and Sivagnanasithi (2014), Maysami *et al.* (2004) and Gautam and Acharya (2015).

The WACMR (+0.2212) and WPI (+0.0964) have a positive relation with CNX 500 in the long-run. Therefore, H_0^5 "*there is no long-run relationship between weighted average call money rate, wholesale price index and CNX 500*" is accepted. The results of WPI are consistent with the results of Venkatraja (2014), Srivastava (2010) and Mohananmani and Sivagnanasithi (2014), however, they are contrary to the outcome of Singh (2010), Kumar (2011, Ray (2012) and Naik and Padhi (2012).

Short -run relationship between selected Macro-economic Variables and CNX 500

Table 4 Results of Vector Error Correction Model

D(CNX 500 (-1))	D(COP (-1))	D(ER (-1))	D(FER (-1))	D(GP (-1))	D(SP (-1))
0.735372	-0.236680	0.079202	1.188078	-0.330258	0.222074
(0.52334)	(0.29113)	(0.89671)	(1.03542)	(0.65030)	(0.34985)
[1.40515]	[-0.81297]	[0.08833]	[1.14743]	[-0.50785]	[0.63477]
D(IIP(-1)	**D(ISP (-1))**	**D(WACMR(-1))**	**D(WPI (-1))**	**D(MS (-1))**	
-0.812609	-0.943090	0.224373	0.017219	-1.940284	
(0.81940)	(0.88040)	(0.12271)	(0.06647)	(1.67845)	
[-0.99172]	[-1.07121]	[1.82851]	[0.25904]	[-1.15599]	

Source: Computed results based on secondary data compiled from NSE and RBI websites.
Notes: Standard error in () and t- statistics [].

Vector Error Correction Model equation:

D (CNX 500(-1)) = D (-0.236680(-1))(COP) + D (0.079202(-1)) (ER) + D (1.188078(-1)) (FER) – D (-0.330258(-1))(GP) + D (0.222074(-1))(SP) – D (-0.812609(-1))(IIP) – D (-0.943090 (-1))(ISP) + D (0.224373(-1)) (WACMR) +D (0.017219(-1))(WPI) - D (-1.940284(-1))(MS)

In order to study the short-run dynamics of the model, vector error correction model is applied and the results are shown in *table 4*. The crude oil price (COP) showed negative relation *(-0.236680*) with CNX 500 in short-run whereas higher crude oil price increases the cost of production, which might decrease the profit of the firms, hence decreases the stock price, so the expected relationship between crude oil price and stock price is negative. The FER has a positive relationship (1.188078) with CNX 500. The GP has a negative relation (-0.330258) with CNX 500 in short-run, which indicates that gold price attracts the investors towards the commodity market, which might decrease the investors' preference towards investment in equity market. Hence, H_0^6 "*there is no short-run relationship between crude oil price, gold price, foreign exchange reserves and CNX 500*" is rejected.

The exchange rate (0.079202) showed positive relation with

CNX 500. Hence, H_0^7 "*there is no short-run relationship between exchange rate and CNX 500*" is rejected, whereas depreciation of domestic currency increases the cost of import. The SP showed a positive relation (0.222074) with CNX 500 in the short-run. Therefore, H_0^8 "*there is no short-run relationship between silver price and CNX 500"* is accepted.

The IIP (–0.812609), ISP (-0.943090) and MS (-1.940284) have a negative relationship with CNX 500 in the short-run. Hence, H_0^9 "*there is no short-run relationship between index of industrial production, index of service production, money supply and CNX 500*" is accepted, Therefore, IIP and ISP do not reflect the growth rate of service industries over the study period. The WACMR (+0.224373) and WPI (+0.017219) have a positive relation with CNX 500 in the short-run. Therefore, H_0^{10} "*there is no short-run relationship between weighted average call money rate, wholesale price index and CNX 500*" is accepted.

Policy Prescription

The results have implication on domestic as well as on foreign investors, stock market regulators, policy makers and stock market analysts. Investors and security analysts could forecast stock prices and earn profits. The stock market regulators viz., SEBI could take initiatives to scrutinize the activities of firms to prevent manipulation of stock prices and get the public educated on the stock market and encourage them to invest in the stocks. The policy makers should be acquainted of these macro-economic effects on the stock market and make their decision in a more efficient and practical way.

Conclusion

The study investigated long-run and short-run relationship between the selected macro-economic variables and CNX 500. All the series used in the analysis are found non-stationary at levels but stationary at first difference. The study found that the crude oil price and gold price have negative relationship with CNX 500 and foreign exchange reserves has positive relationship with CNX 500, both in long-run as well as in short-run. Therefore, higher crude oil price increases cost of production, which might decrease profit of firms, hence decreases stock price, so the expected relationship between crude oil price and stock price is negative.

Exchange rate has negative relationship in the long-run but positive relationship in the short-run with CNX 500. Index of industrial production, index of service production and money supply have negative relationship, both in long-run as well as in short-run with CNX 500. Hence, IIP and ISP do not reflect the growth rate and service industries over the study period. Weighted average call money rate, and wholesale price index have a positive relationship with CNX 500, both in short-run as well as in long-run.

Limitations of the Study

- The study is limited to CNX 500 from NSE, which is higher and has increasing growth in turnover when compared to BSE for the period from 2006 to 2015.
- The study is restricted to analyse the long-run and short-run relationship of macro-economic variables with CNX 500.

Scope for Further Studies

Further studies could be undertaken in the following aspects:

- Studies can be extended using other indices viz. NSE 500, BSE sensex, etc. and macro-economic variables viz. balance of trade, foreign direct investment, gross fixed capital formation and gross domestic product.
- Studies can also be done using other econometric tools like autoregressive distributive lag (ARDL), Wald test, Principal component matrix, ANOVA, etc.
- Studies can also be done including variables viz. CNX FMCG, CNX IT, CNX Bank, CNX Energy, etc., considering sector wise stock index.

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Investment Decision Making: Behavioural Biases

Udayan Das and Shakti Ranjan Mohapatra

Abstract

This primary research study has been initiated to examine if individuals are really getting affected with regret or not. It is strongly evidenced that individuals experience regret while executing investment decision making. Sometimes they buy or sell at a wrong time while sometimes they miss out the opportunity due to inaction. Regret arises as a natural consequence of an erroneous investment decision which in turn makes the individual skeptical for future occasions of similar decision-making.

Keywords: *Bias, Regret, Errors of commission, Errors of omission, Investment decision-making*

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Regret is a negative emotion experienced when it is realized that an alternative course of action would have resulted in a more favorable outcome. In investment decision-making, it is a very common experience. It happens when they get convinced that they have made a bad decision in the past which could have been replaced by a better decision for better outcome. Regret refers to the sufferings from emotions of pain and anger resulting out of such experience.

Regret may arise in two ways – errors of commission and errors of omission. Errors of commission occur when individuals take misguided actions. Errors of omission arise from misguided inaction, that is, opportunities overlooked or foregone by the individuals. Two very common incidences are available. An investor subsequently finds out that the sale of a particular stock was made untimely. It went up much further after the sales had been made, resulting regret which is arising through the path of errors of commission. On the other hand, an investor may find out that she / he should have bought the stock earlier at a lower price because subsequently, its price has risen. The loss of opportunities causes regret which comes through the path of errors of

omission.

To explain the concept of regret in connection with investment decision-making, the golden remarks of Harry Markowitz (1997), the father of modern portfolio theory may be quoted, "I visualized my grief if the stock market went way up and I wasn't in it - or if it went way down and I was completely in it. My intention was to minimize my future regret, so I split my retirement plan contributions 50/50 between bonds and equities."

A primary research study had been initiated to examine if individuals are really experiencing regret or not. Structured Questionnaire was devised keeping in view both the possible ways. It has been also tried to analyze whether the occurrence of regret is different among different demographic cross-sections of the society.

Previous Studies. and **Scope of Research**

Itamar Siminson (1992) said that anticipating the possibility of regret tends to lead consumers to buy a product that is on "sale" now instead of waiting for a better "sale" later, and to choose a well-known, expensive brand over a lesser-known, less expensive brand. When making risky choices, anticipating regret leads to the opposite effect than anticipating responsibility or blame.

"Regret is a more or less painful cognitive and emotional state of feeling sorry for misfortunes, limitations, losses, transgressions, shortcomings or mistakes" (Landman, 1993, p. 36).

Regret can affect people in two different ways: First, it can lead people to try to undo the effects of their regretted choice, after the decision is made (Gilovich. and Medvec, 1995). Second, it can affect people's choices before the decision is made, when they anticipate the regret they may feel later (if the decision turns out badly) (Bell, 1982; Janis . and Mann, 1977; Loomes . and Sugden, 1982; Sage . and White, 1983; Savage, 1951). Bell (1982) and Loomes and Sugden (1982) explicitly incorporated the anticipatory aspects of regret in their model of decision making, called "regret theory."

Sorum, Mullet, Shim, Bonnin-Scaon, Chasseigne and Coqneau (2004) suggested that regret is an important emotion when analysing real life decision-making. In financial markets, investors would experience regret.

When people fear that their decision will turn out to be wrong in hindsight, they exhibit regret aversion. This bias is associated with risk aversion. Regret-averse people may fear the consequences of both errors of omission (not buying the right investment property) and commission (buying the wrong investment property) (Seiler et al., 2008).

Sherfin (2009) stated that everyone will experience regret in real life. He described regret as an emotion of pain and anger. It is experienced when individuals get convinced that they have made a bad decision in the past and realize that they could have considered another option resulting better outcome. It may happen when they buy too high or sell too low or sell winner stocks too early or holding on the losers for a longer duration. This will cause them regret.

There was indeed a great urge to undertake a research work on Indian investors following the footsteps of previous researchers. This paper reflects the findings of that research work which was focused to observe the influence of individual's regret in investment decision making process.

Objectives

1) To observe the influence of individual's regret in investment decision making process.

2) To analyze such influences based on multiple demographic parameters.

Research Methodology

The entire research study is exclusively based on primary data. The primary data is collected through structured questionnaire. There are two distinctly segmented sections in the questionnaire:

A. Personal and Demographic information,

B. Questions for Hypotheses testing.

Personal . and Demographic information

Question numbers 1-5 are for personal information and answers are open-ended.

Q-1. Name

Q-2. Address

Q-3. City

Q-4. Contact No.

Q-5. Email id

Question numbers 6-10 are specifically for five demographic variables. Responses have been collected through a closed options mode.

Q-6. Gender

Q-6 is to collect the information of gender which has two options, viz, Male and Female.

Q-7. Age

Q-7 is to collect the information of age group of the individual which has four options: 26-35 Years, 36-45 Years, 46-55 Years and 56-65 Years. Age group upto 25 has not been considered as they are not too much exposed towards investment decision making as well as age group over 65 has also not been considered because of limited requirements of investment decisions.

Q-8. Occupation

Q-8 is to collect the information of occupation which has three options: Salaried, Self- Employed and Professional.

Q-9. Annual Income

Q-9 is to collect the information of income where four different income groups are kept which are: INR 3,00,000 to INR 6,00,000, INR 6,00,001 to INR 9,00,000, INR 9,00,001 to INR 12,00,000 and INR 12,00,001 to INR 15,00,000. The annual income group below INR 3,00,000 has been excluded for limited exposure towards investment and the annual income group above INR 15,00,000 has also been excluded due to their higher income status.

Q-10. I invest in stock market (Investment frequency)

Q-10 is to collect the information of investment frequency where four options are kept: (I invest in stock market) Regularly, Very often, Sometimes and Never. All the responses with "Never" option have been excluded as the responses of an individual having no exposure to the stock market do not reflect the proper views.

Questions for Hypotheses testing

Question numbers 11-15 are related to Hypothesis-1 "***Investment decision-making is influenced by individual's regret.***"

To test this hypothesis, respondents are asked five individual questions which are as under:

Q-11. I should have bought the stock earlier at a lower price because now its price has risen.

Q-12. I should have sold the stock earlier at a higher price because the price has dropped now.

Q-13. I should not have bought the stock hurriedly as the stock price went up then due to a hype.

Q-14. I should have held the stock further because the price has increased over my selling price now.

Q-15. I should have listened to the advices of my elders or friends before I bought/sold the stock.

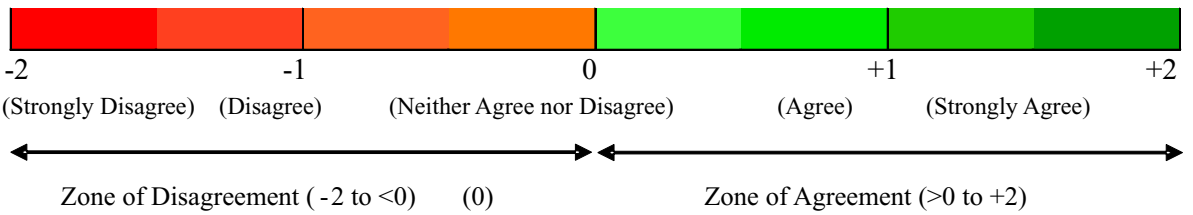
In all the questions, the focus of research is to study whether the investors suffer from emotion of pain and anger while they analyze their decisions. Investors very commonly experience regret when they get convinced that they have made a bad decision in the past which could have been replaced by a better decision for better outcome. It is to be seen that whether respondents are affected with regret in case of investment decision-making.

Before we observe and analyze the responses, reliability analysis of the data is performed. Reliability analysis is applied to identify how well the questions grouped are positively correlated to one another. Cronbach's alpha value of 0.60 and above is considered to be reliable (Nunnally and Bernstein, 1994) as it indicates the items are homogenous and measuring the same construct. To establish the reliability, Cronbach's alpha for the grouped questions Q-11-15 is calculated.

For Q-11 to Q-15, respondents are advised to answer their opinion against each statement in terms of Likert scale. A five point Likert scale has been used with forced choice method. The responses are to measure the degree of agreements and disagreements. Statements are prepared carefully to indicate the existence of the biases. H-1 is tested vide Q-11 to Q-15 where all the statements are in support of the influence of regret. The five points of measurements are "Strongly disagree," "Disagree," "Neither Agree nor Disagree, "Agree, and "Strongly Agree."

The assigned values are -2, -1, 0, +1, +2 respectively. As the target is to know the degree of agreement or disagreement, forced choice method has been used. Applying this method, the respondents are not given the option of "Neither Agree nor Disagree." It forces the respondents either to give opinion for agreement or disagreement. For a particular

statement, if the value of the answer is greater than zero, the statement is agreed and, if the value of the answer is less than zero, the statement is disagreed. Now, if the mean score of all responses for a particular question is greater than 0 and upto +1, it can be stated that the statement is agreed. Similarly, if the mean score of all responses for a particular question is greater than +1, it can be stated that the statement is strongly agreed. Reversely, if the mean score of all responses for a particular question is less than 0 and upto -1, it can be stated that the statement is disagreed and, if the mean score of all responses for a particular question is less than -1, it can be stated that the statement is strongly disagreed. Cumulating the values of all five questions grouped for the hypothesis, the final opinion relating to acceptance or rejection of the hypothesis is made. The mean score with a positive numeric value makes the hypothesis accepted and if the score crosses 1, it makes the hypothesis strongly accepted. On the other hand, the mean score with a negative numeric value makes the hypothesis rejected and if that is below -1, it makes the hypothesis strongly rejected.



As respondents are not provided with the middle option, for all purposes, the scale appears as a four point scale. As a consequence, the data collection, analysis and testing of hypothesis are also performed with the options "Strongly Disagree (-2)", "Disagree (-1)," "Agree (+1)," and "Strongly Agree (+2)". The middle point signifying neither agreement nor disagreement is thus, non-existing in the entire data analysis and test of hypothesis.

Data Analysis – Descriptive Statistics

Responses have been collected in the form of primary data through two different modes.

1. Online questionnaire (Through Surveymonkey.com)
2. Physical collection through hard copy of the questionnaire

A total number of 360 responses have been collected through online mode and 140 responses have been collected through physical collection mode. The data collection has taken place during the period 05.01.2015 to 02.01.2016.

The total numbers of 500 responses have been received from 97 different places of 20 states of India. Responses have been received from the following states:

1. Andhra Pradesh
2. Assam
3. Bihar
4. Chhattisgarh
5. Delhi
6. Gujarat
7. Haryana
8. Jharkhand
9. Karnataka
10. Kerala
11. Madhya Pradesh
12. Maharashtra
13. Odisha
14. Punjab
15. Rajasthan
16. Tamil Nadu
17. Telangana
18. Uttar Pradesh
19. Uttarakhand
20. West Bengal

A questionwise analysis is made. The responses received are presented in structured tabular format along with graphical representations. This is the descriptive statistics pertaining to the responses received against each question.

The gender wise distribution of the respondents is as follows:

Table – 1
Gender wise distribution of the respondents (Q-6)

Gender		
Answer Options	**Response Percent**	**Response Count**
Female	20.20%	101
Male	79.80%	399

It is clear that male respondents (79.80%) are clearly outnumbering the female respondents (20.20%). It signifies that male respondents are more into investments.

The age wise distribution of the respondents is as follows:

Table – 2
Age wise distribution of the respondents (Q-7)

Answer Options	Response Percent	Response Count
26-35	72.60%	363
36-45	15.20%	76
46-55	8.80%	44
56-65	3.40%	17

The largest respondent age group is 26-35 (72.60%) followed by 36-45 (15.20%), 46-55 (8.80%) and 56-65 (3.40%). It signifies that annual income below INR 15,00,000 is mostly earned by the age group 26-35. As the maximum income limit is INR 15, 00,000 the number of responses become less as we move to higher age groups.

The occupation wise distribution of the respondents is as follows:

Table – 3
Occupation wise distribution of the respondents (Q-8)

Answer Options	Response Percent	Response Count
Salaried	77.80%	389
Self-Employed	12.40%	62
Professional	9.80%	49

The largest respondent occupational group is Salaried (77.80%) which is significantly higher than the other two groups, Self-Employed (12.40%) and Professional (9.80%). It is in the line with the largest participation by the 26-35 age group and the income below INR 15,00,000.

The income wise distribution of the respondents is as follows:

Table – 4
Income wise distribution of the respondents (Q-9)

Answer Options	Response Percent	Response Count
INR 3,00,000 - 6,00,000	68.60%	343
INR 6,00,001 - 9,00,000	17.80%	89
INR 9,00,001 - 12,00,000	6.00%	30
INR 12,00,001 - 15,00,000	7.60%	38

The largest respondent income group is INR 3,00,000 - 6,00,000 (68.80%) which is followed by INR 6,00,001 – 9,00,000 (17.80%), INR 9,00,001 – 12,00,000 (6.00%) and INR 12,00,001 – 15,00,000 (7.60%). From a counter view, it is in the line with largest participation by the lowest age group and Salaried class.

The investment frequency wise distribution of the respondents is as follows:

Table – 5
Investment frequency wise distribution of the respondents (Q-10)

Answer Options	Response Percent	Response Count
Regularly	10.40%	52
Very often	17.80%	89
Sometimes	71.80%	359
Never	0.00%	0

All such responses are not considered in this study where, respondents are found to be a non-investor. The majority of the respondents are investing "Sometimes" (71.80%) which is followed by "Very often" (17.80%) and "Regularly" (10.40%).

Q-11 to Q-15 is related to Hypothesis-1 where the hypothesis is tested by these 5 questions. Responses are taken through a Likert scale with a forced choice method.

Table – 6
Strength of Agreement by respondents for Q-11 (H-1)

I should have bought the stock earlier at a lower price because now its price has risen.		
Answer Options	**Response Percent**	**Response Count**
Strongly disagree (-2)	1.60%	8
Disagree (-1)	6.00%	30
Agree (+1)	68.00%	340
Strongly agree (+2)	24.40%	122

Table – 7

Strength of Agreement by respondents for Q-12 (H-1)

I should have sold the stock earlier at a higher price because the price has dropped now.		
Answer Options	**Response Percent**	**Response Count**
Strongly disagree (-2)	1.00%	5
Disagree (-1)	6.20%	31
Agree (+1)	72.20%	361
Strongly agree (+2)	20.60%	103

Table – 8

Strength of Agreement by respondents for Q-13 (H-1)

I should not have bought the stock hurriedly as the stock price went up then due to a hype.		
Answer Options	**Response Percent**	**Response Count**
Strongly disagree (-2)	1.00%	5
Disagree (-1)	6.60%	33
Agree (+1)	74.20%	371
Strongly agree (+2)	18.20%	91

Table – 9

Strength of Agreement by respondents for Q-14 (H-1)

I should have held the stock further because the price has increase d over my selling price now.		
Answer Options	**Response Percent**	**Response Count**
Strongly disagree (-2)	1.20%	6
Disagree (-1)	6.60%	33
Agree (+1)	72.60%	363
Strongly agree (+2)	19.60%	98

Table – 10

Strength of Agreement by respondents for Q-15 (H-1)

I should have listened to the advices of my elders or friends before I bought/sold the stock.		
Answer Options	**Response Percent**	**Response Count**
Strongly disagree (-2)	1.60%	8
Disagree (-1)	9.20%	46
Agree (+1)	61.40%	307
Strongly agree (+2)	27.80%	139

Data Analysis – Test of Hypothesis

In all the questions, the focus of research is to study whether the investors suffer from emotion of pain and anger while they analyze their past decisions. Investors very commonly experience regret when they get convinced that they have made a bad decision in the past which could have been replaced by a better decision for better outcome. It is to be seen that whether respondents are affected with regret in case of investment decision-making. The hypothesis framed in this regard is as follows:

H-1: Investment decision-making is influenced by individual's regret.

As already stated, before analyzing the data, the reliability test has been performed for the grouped questions Q-11 to Q-15 in connection with the test of Hypthesis-1. The grouped questions of Q-11 to Q-15 have the Cronbach's alpha value of 0.761. It proves the positive correlation among the questions constructed in a fair manner and the reliability is established.

The answers given by the respondents for Q-11 to Q-15 reveal the followings:

Table – 11
Strength of Agreement by respondents for Q-11

I should have bought the stock earlier at a lower price because now its price has risen.								
Answer Options			**Response Percent**			**Response Count**		**Score**
Strongly disagree (-2)			1.60%			8		-16
Disagree (-1)			6.00%			30		-30
Agree (+1)			68.00%			340		340
Strongly agree (+2)			24.40%			122		244
							Total Score	539
							Mean Score	1.08
							Standard Deviation	0.789
Demographic analysis of the responses								
Demographic Parameters		No	**Strongly Disagree (-2)**	**Disagree (-1)**	**Agree (+1)**	**Strongly Agree (+2)**	**Total Respondents**	**Mean Score**
Gender	Female	101	1	8	68	24	101	1.05
	Male	399	7	22	272	98	399	1.08
	Total	**500**	**8**	**30**	**340**	**122**	**500**	**1.08**
Age Group	26-35	363	4	24	243	92	363	1.09
	36-45	76	2	3	57	14	76	1.03
	46-55	44	1	2	28	13	44	1.14
	56-65	17	1	1	12	3	17	0.88
	Total	**500**	**8**	**30**	**340**	**122**	**500**	**1.08**
Occupation	Salaried	389	7	24	264	94	389	1.06
	Self-Employed	62	0	4	43	15	62	1.11
	Professional	49	1	2	33	13	49	1.12
	Total	**500**	**8**	**30**	**340**	**122**	**500**	**1.08**
Income Range	INR 3,00,000 - 6,00,000	343	5	21	233	84	343	1.08
	INR 6,00,001 - 9,00,000	89	1	5	60	23	89	1.11
	INR 9,00,001 - 12,00,000	30	0	2	24	4	30	1.00
	INR 12,00,001 - 15,00,000	38	2	2	23	11	38	1.03
	Total	**500**	**8**	**30**	**340**	**122**	**500**	**1.08**
Investment Frequency	Regularly	52	2	2	37	11	52	1.02
	Very often	89	3	4	61	21	89	1.04
	Sometimes	359	3	24	242	90	359	1.09
	Total	**500**	**8**	**30**	**340**	**122**	**500**	**1.08**

Male respondents have higher level of agreement. Age group 46-55, Professional group, Income group INR 6,00,001-9,00,000 and Sometimes group have the highest level of agreements in four other parameters.

Table – 12
Strength of Agreement by respondents for Q-12

I should have sold the stock earlier at a higher price because the price has dropped now.								
Answer Options			**Response Percent**		**Response Count**			**Score**
Strongly disagree (-2)			1.00%		5			-10
Disagree (-1)			6.20%		31			-31
Agree (+1)			72.20%		361			361
Strongly agree (+2)			20.60%		103			206
							Total Score	526
							Mean Score	1.05
							Standard Deviation	0.736
Demographic analysis of the responses								
Demographic Parameters		No	**Strongly Disagree (-2)**	**Disagree (-1)**	**Agree (+1)**	**Strongly Agree (+2)**	**Total Respondents**	**Mean Score**
Gender	Female	101	1	5	71	24	101	1.11
	Male	399	4	26	290	79	399	1.04
	Total	**500**	**5**	**31**	**361**	**103**	**500**	**1.05**
Age Group	26-35	363	4	21	261	77	363	1.06
	36-45	76	0	6	57	13	76	1.01
	46-55	44	1	1	30	12	44	1.16
	56-65	17	0	3	13	1	17	0.71
	Total	**500**	**5**	**31**	**361**	**103**	**500**	**1.05**
Occupation	Salaried	389	5	22	281	81	389	1.06
	Self-Employed	62	0	6	47	9	62	0.95
	Professional	49	0	3	33	13	49	1.14
	Total	**500**	**5**	**31**	**361**	**103**	**500**	**1.05**
Income Range	INR 3,00,000 - 6,00,000	343	4	23	243	73	343	1.04
	INR 6,00,001 - 9,00,000	89	1	2	70	16	89	1.10
	INR 9,00,001 - 12,00,000	30	0	1	26	3	30	1.03
	INR 12,00,001 - 15,00,000	38	0	5	22	11	38	1.03
	Total	**500**	**5**	**31**	**361**	**103**	**500**	**1.05**
Investment Frequency	Regularly	52	1	2	40	9	52	1.04
	Very often	89	3	4	59	23	89	1.07
	Sometimes	359	1	25	262	71	359	1.05
	Total	**500**	**5**	**31**	**361**	**103**	**500**	**1.05**

Female respondents have higher level of agreement. Age group 46-55, Professional group, Income group INR 6,00,001-9,00,000 and Very often group have the highest level of agreements in four other parameters.

Table – 13

Strength of Agreement by respondents for Q-13

I should not have bought the stock hurriedly as the stock price went up then due to a hype.							
Answer Options			**Response Percent**	**Response Count**			**Score**
Strongly disagree (-2)			1.00%	5			-10
Disagree (-1)			6.60%	33			-33
Agree (+1)			74.20%	371			371
Strongly agree (+2)			18.20%	91			182
						Total Score	510
						Mean Score	1.02
						Standard Deviation	0.732
Demographic analysis of the responses							
Demographic Parameters		No	**Strongly Disagree (-2)**	**Disagree (-1)**	**Agree (+1)**	**Strongly Agree (+2)**	**Total Respondents**	**Mean Score**
Gender	Female	101	1	8	79	13	101	0.94
	Male	399	4	25	292	78	399	1.04
	Total	**500**	**5**	**33**	**371**	**91**	**500**	**1.02**
Age Group	26-35	363	4	22	267	70	363	1.04
	36-45	76	0	6	60	10	76	0.97
	46-55	44	1	4	31	8	44	0.93
	56-65	17	0	1	13	3	17	1.06
	Total	**500**	**5**	**33**	**371**	**91**	**500**	**1.02**
Occupation	Salaried	389	5	29	282	73	389	1.00
	Self-Employed	62	0	1	53	8	62	1.10
	Professional	49	0	3	36	10	49	1.08
	Total	**500**	**5**	**33**	**371**	**91**	**500**	**1.02**
Income Range	INR 3,00,000 - 6,00,000	343	4	21	257	61	343	1.02
	INR 6,00,001 - 9,00,000	89	1	5	64	19	89	1.07
	INR 9,00,001 - 12,00,000	30	0	3	24	3	30	0.90
	INR 12,00,001 - 15,00,000	38	0	4	26	8	38	1.00
	Total	**500**	**5**	**33**	**371**	**91**	**500**	**1.02**
Investment Frequency	Regularly	52	1	2	37	12	52	1.10
	Very often	89	3	7	64	15	89	0.91
	Sometimes	359	1	24	270	64	359	1.04
	Total	**500**	**5**	**33**	**371**	**91**	**500**	**1.02**

Male respondents have higher level of agreement. Age group 56-65, Self-Employed group, Income group INR 6,00,001-9,00,000 and Regular group have the highest level of agreements in four other parameters.

Table –14
Strength of Agreement by respondents for Q-14

I should have held the stock further because the price has increased over my selling price now.								
Answer Options			**Response Percent**		**Response Count**			**Score**
Strongly disagree (-2)			1.20%		6			-12
Disagree (-1)			6.60%		33			-33
Agree (+1)			72.60%		363			363
Strongly agree (+2)			19.60%		98			196
							Total Score	514
							Mean Score	1.03
							Standard Deviation	0.753
Demographic analysis of the responses								
Demographic Parameters		No	**Strongly Disagree (-2)**	**Disagree (-1)**	**Agree (+1)**	**Strongly Agree (+2)**	**Total Respondents**	**Mean Score**
Gender	Female	101	1	6	75	19	101	1.04
	Male	399	5	27	288	79	399	1.03
	Total	**500**	**6**	**33**	**363**	**98**	**500**	**1.03**
Age Group	26-35	363	4	22	265	72	363	1.04
	36-45	76	1	7	54	14	76	0.96
	46-55	44	1	2	32	9	44	1.05
	56-65	17	0	2	12	3	17	0.94
	Total	**500**	**6**	**33**	**363**	**98**	**500**	**1.03**
Occupation	Salaried	389	6	25	284	74	389	1.02
	Self-Employed	62	0	4	46	12	62	1.06
	Professional	49	0	4	33	12	49	1.08
	Total	**500**	**6**	**33**	**363**	**98**	**500**	**1.03**
Income Range	INR 3,00,000 - 6,00,000	343	4	24	247	68	343	1.02
	INR 6,00,001 - 9,00,000	89	1	3	70	15	89	1.07
	INR 9,00,001 - 12,00,000	30	1	3	21	5	30	0.87
	INR 12,00,001 - 15,00,000	38	0	3	25	10	38	1.11
	Total	**500**	**6**	**33**	**363**	**98**	**500**	**1.03**
Investment Frequency	Regularly	52	2	2	37	11	52	1.02
	Very often	89	3	7	51	28	89	1.06
	Sometimes	359	1	24	275	59	359	1.02
	Total	**500**	**6**	**33**	**363**	**98**	**500**	**1.03**

Female respondents have higher level of agreement. Age group 46-55, Professional group, Income group INR 12,00,001-15,00,000 and Very often group have the highest level of agreements in four other parameters.

Table – 15
Strength of Agreement by respondents for Q-15

I should have listened to the advices of my elders or friends before I bought/sold the stock.								
Answer Options			**Response Percent**		**Response Count**			**Score**
Strongly disagree (-2)			1.60%		8			-16
Disagree (-1)			9.20%		46			-46
Agree (+1)			61.40%		307			307
Strongly agree (+2)			27.80%		139			278
							Total Score	523
							Mean Score	1.05
							Standard Deviation	0.888
Demographic analysis of the responses								
Demographic Parameters		No	**Strongly Disagree (-2)**	**Disagree (-1)**	**Agree (+1)**	**Strongly Agree (+2)**	**Total Respondents**	**Mean Score**
Gender	Female	101	1	5	68	27	101	1.14
	Male	399	7	41	239	112	399	1.02
	Total	**500**	**8**	**46**	**307**	**139**	**500**	**1.05**
Age Group	26-35	363	6	29	230	98	363	1.06
	36-45	76	1	11	44	20	76	0.93
	46-55	44	1	6	21	16	44	1.02
	56-65	17	0	0	12	5	17	1.29
	Total	**500**	**8**	**46**	**307**	**139**	**500**	**1.05**
Occupation	Salaried	389	8	33	243	105	389	1.04
	Self-Employed	62	0	5	41	16	62	1.10
	Professional	49	0	8	23	18	49	1.04
	Total	**500**	**8**	**46**	**307**	**139**	**500**	**1.05**
Income Range	INR 3,00,000 - 6,00,000	343	6	31	211	95	343	1.04
	INR 6,00,001 - 9,00,000	89	1	7	58	23	89	1.07
	INR 9,00,001 - 12,00,000	30	0	5	19	6	30	0.87
	INR 12,00,001 - 15,00,000	38	1	3	19	15	38	1.16
	Total	**500**	**8**	**46**	**307**	**139**	**500**	**1.05**
Investment Frequency	Regularly	52	2	4	36	10	52	0.92
	Very often	89	4	8	56	21	89	0.92
	Sometimes	359	2	34	215	108	359	1.09
	Total	**500**	**8**	**46**	**307**	**139**	**500**	**1.05**

Female respondents have higher level of agreement. Age group 56-65, Self-Employed group, Income group INR 12,00,001-15,00,000 and Sometimes group have the highest level of agreements in four other parameters.

The overall scenario for Q-11 to Q-15 is as under:

- Female respondents have higher level of agreement.
- Age group 46-55 has highest level of agreement.
- Professional group has highest level of agreement.
- Income group INR 6,00,001-9,00,000 has highest level of agreement.
- Sometimes group have the highest level of agreement.

All the answers individually signify strong agreement with respective mean scores of 1.08, 1.05, 1.02, 1.03 and 1.05 while, if we consider the agreement scenario for the grouped questions Q-11 to Q-15, we have the mean score as 1.04.

It shows that the all the individual questions are answered with strong agreement by the respondents as all the mean scores are greater than 1. The mean score of the group is also greater than 1 which signifies strong agreement for the group as a whole.

Demographic analysis

Table – 16
Demographic analysis of respondents' choices on Grouped Questions for H-1

Gender	**Female**	**Male**			**H-1**
Mean score	1.06	1.04			1.04
Age Group	**26-35**	**36-45**	**46-55**	**56-65**	**H-1**
Mean score	1.06	0.98	1.06	0.98	1.04
Occupation	**Salaried**	**Self-Employed**	**Professional**		**H-1**
Mean score	1.03	1.06	1.09		1.04
Income Range	**3,00,000-6,00,000**	**6,00,001-9,00,000**	**9,00,001-12,00,000**	**12,00,001-15,00,000**	**H-1**
Mean score	1.04	1.08	0.93	1.06	1.04
Investment Frequency	**Regularly**	**Very often**	**Sometimes**		**H-1**
Mean score	1.02	1.00	1.06		1.04

There is no major difference in opinion among Female and Male in the context of grouped questions for Hypothesis-1. While the mean score is 1.04 for the entire respondents, mean score for Female is marginally higher at 1.06 but for Male respondents, it is 1.04. There is a strong agreement for both the genders.

Age group 26-35 and 46-55 show the strongest agreement for Hypothesis-1 with a mean score of 1.06. The other two age groups are marginally lower than strong agreement zone with a mean score of 0.98. However, comfortable agreement is there in terms of mean score across the all age groups.

All the occupational groups are showing strong agreement in favour of Hypothesis-1. Professional group shows the highest mean score with 1.09 followed by Self-Employed with 1.06 and Salaried at 1.03. It is observed that there is a strong agreement in favour of Hypothesis-1 for all occupational groups.

The group having income range of INR 6,00,001-9,00,000 shows the strongest agreement for Hypothesis-1 with a mean score of 1.08. That is closely followed by the group having income range INR 12,00,001-15,00,000 with the mean score 1.06. The income group INR 3,00,000-6,00,000 has also a strong agreement with a mean score of 1.04 but the other income group of INR 9,00,000-12,00,000 is just lower than strong agreement zone with a mean score of 0.93. However, all the income groups show clear agreement in favour of Hypothesis-1.

Sometimes group has the highest mean score of 1.06 while the Mean scores are 1.02 and 1.00 respectively for the investors belonging to the Regular group and Very often group. The agreement in favour of Hypothesis-1 is very clearly seen irrespective of their investing frequency.

Table – 17
Response Analysis for Hypothesis

Particulars	Q-11	Q-12	Q-13	Q-14	Q-15	H-1 (Total Score)	
Strongly Disagree (-2)	8	5	5	6	8	32	7 (<-5)
Disagree (-1)	30	31	33	33	46	173	8 (<0, >=-5)
Neither Agree nor Disagree (0)	NA	NA	NA	NA	NA	NA	NIL (=0)
Agree (+1)	340	361	371	363	307	1742	233 (<=5, >0)
Strongly Agree (+2)	122	103	91	98	139	553	252 (>5)
Total Respondents	500	500	500	500	500	500 (x 5)	500
Total Score	538	526	510	514	523	2611	---
Mean Score	1.08	1.05	1.02	1.03	1.05	1.04	---
Disagreement Zone (%)	7.60%	7.20%	7.60%	7.80%	10.80%	8.20%	3.00%
Indifferent Zone (%)	NA	NA	NA	NA	NA	NA	0.00%
Agreement Zone (%)	92.40%	92.80%	92.40%	92.20%	89.20%	91.80%	97.00%

Mean scores have been calculated based on the assigned values of -2, -1, 1 and 2 for strong disagreement, disagreement, agreement and strong agreement. It means, the strong disagreement zone lies between -2 to <-1, disagreement zone is -1 to <0, agreement zone is >0 to 1 and strong agreement zone is >1. The total score for Q-11 is thus (8 x -2) + (30 x -1) + (340 x 1) + (122 x 2) = 538. The mean score is thus, 538 ÷ 500 = 1.08. We see the mean scores for Q-12 to Q-15 as 1.05, 1.02, 1.03 and 1.05 respectively. Hence, strong agreement is exhibited in case of all five questions.

A respondent has the option to choose any one out of four options where two belong to wider agreement zone (strong agreement zone + agreement zone, assigned vale range >0) and other two belong to wider disagreement zone (strong disagreement zone + disagreement zone, assigned vale range <0). In case of Q-11, 8 respondents have strong disagreement and 30 are having disagreement. Taking both into consideration, the disagreement zone is (8+30) ÷ 500 x 100% = 7.60%. Similarly, respondents in the agreement zone amounting to (340+122) ÷ 500 x 100% = 92.40%. The disagreement-agreement combinations for Q-12 to Q-15 are (7.20%, 92.80%), (7.60%, 92.40%), (7.80%, 92.20%) and (10.80%, 89.20%) respectively. It is evident that huge majority of the respondents are in the agreement zone for all five questions.

The Hypothesis-1 is tested in the light of mean score. The total score of the grouped questions (Q-11 to Q-15) = 538 + 526 + 510 + 514 + 523 = 2611. The mean score is then 2611 ÷ (500 x 5) = 1.04. The total no of respondents in the disagreement zone has been calculated by adding total no of respondents with "Strongly Disagree" options and "Disagree" options. The total no of respondents in the agreement zone has been calculated by adding total no of respondents with "Strongly Agree" options and "Agree" options. The count happens to be 205 and 2295 which signifies a disagreement zone of 8.20% and an agreement zone of 91.80%. It proves the Hypothisis-1 to be true.

Another analysis has been performed to prove the hypothesis. The assigned values aggregating all five questions for a respondent ranges between -10 to +10. This range may be classified in five zones, viz, strong disagreement zone (-10 to -6), disagreement zone (-5 to -1), indifferent zone (0), agreement zone (1 to 5) and strong agreement zone (5 to 10). Based on the total score, 7 respondents have the total score between -10 to -6, 8 respondents have the total score between -5 to -1, no respondent has the score of 0, 233 respondents have the total score between 1 to 5 and 252 respondents have the total score between 6 to 10. In the broader dimension, (7+8) = 15 (3.00%) respondents belong to disagreement zone and (233+252) = 485 (97.00%) respondents belong to agreement zone. It re-affirms that Hypothesis-1 to be true.

Hence, it is proved that "***Investment decision making is influenced by individual's regret.***"

Hypothesis-1 (H-1) is accepted.

Conclusion

In this research study, it is strongly evidenced that individuals experience regret while executing investment decision making. Every individual takes certain investment decisions which are based on individual's estimation or projection about future, As that is always uncertain, there is always a possibility that the individual finds out later that her / his decision was wrong rather the other alternatives available would have resulted better outcome. We have seen that individuals experienced regret because sometimes they realised that purchase of stocks were made too early at a higher price, sometimes selling of stocks were made too early at a much lower price. In both the cases, better alternative would have been to wait a little bit extra for observation. Sometimes they regret for their lost opportunities due to inaction, may be in the form of not buying / selling at appropriate time or not considering the advices which would have been really fruitful. Regret arises as a natural consequence of an erroneous investment decision which in turn makes the individual sceptical for future occasions of similar decision-making.

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Consumer Exploratory Tendencies Towards Watches : Demographic Differences

Geetu Tuteja

Abstract

This paper presents factors influencing Exploratory Tendencies of consumers towards watches and studies the impact of demographics on identified factors influencing exploratory tendencies of watches. Data were collected from 857 respondents of New Delhi. The results show that younger people have more information seeking tendencies and score highest on interpersonal communication and innovative tendencies. Females explore more while shopping and are more innovative whereas males show a tendency towards repetitive behavior. Lower income groups seek more information before buying and students are highest on information seeking and innovation. Housewives tend to take at most risk of buying new styles of watches in their shopping.

Keywords: *Exploratory tendencies, watches, demographics, optimum stimulation level, Exploratory Factor Analysis*

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Optimum stimulation level (OSL) is a concept that was introduced almost simultaneously in Psychology and marketing. This is a property that characterizes an individual's general response towards environmental stimuli. According to Psychologists like Hebb (1955) and Leuba (1955), every organism has got a certain level of stimulation that can be termed as Optimum Stimulation which it tries to balance with the environmental stimulation by either increasing or reducing as required. This has given rise to a new behaviour called "Exploratory Tendency" that is defined as that behaviour which is aimed at modifying stimulation from the environment. Apart from Psychology, exploratory tendency has got quite a reference in the consumer behavior research. Venkatesan (1973) and Raju (1977) reviewed a number of existing theories on consumer behavior. OSL and exploratory tendencies find a great relevance in today's world of marketing and consumer behavioral tendencies giving a new perspective to current era marketing managers who are responsible for marketing of their products or services as per the customer demands to work towards consumer delight. Various theories have been propagated to show a relationship between OSL and

exploratory tendencies that are concerning a few response categories mainly *repetitive behavior proneness, innovativeness, risk taking, and information seeking* to name a few prominent ones (Raju, 1980). Steenkamp and Baumgartner (1996) provided a two – factor conceptualization of exploratory consumer behavior related to exploratory acquisition of product (EAP) and exploratory information seeking (EIS) wherein the former deals with stimulation in the product purchase through risky and innovative product choices and different purchase experiences while latter deals with the cognitive side of it.

Literature Review

The influences of various consumer demographics on OSL and Exploratory Tendencies have been studied by very few researchers. Raju (1980) found age, employment status and education correlated with OSL but income showed no correlation with OSL. It proves that relatively younger, educated and employed people are high on OSL and therefore have greater Exploratory Tendencies. Surajit et al. (2009) in his study attempted to explore the relationship of age, gender, income and education with various exploratory tendencies like Brand Switching, Risk Taking/ Innovativeness and Curiosity Motivated Behavior. He found that males are higher on Risk Taking/ Innovativeness as compared to females. Younger people have greater tendency to involve themselves in Interpersonal Communication. The study also found that income and education have no significant effect on Brand Switching, Risk Taking/ Innovativeness and Curiosity Motivated Behavior. Kish and Busse(1968) found education to be positively correlated with OSL and found an inverted U-Shape relationship between age and OSL which indicates that middle age grouped people are highest on OSL. Ailawadi et al. (2001) found that higher educated customers used to seek more variety as compared to lower educated customers. Robertson (1971) found negative correlation between age and adoption of new products. He also found a positive correlation between education and income and adoption of new products and Im et al. (2003) supported his findings. Urbany et al. (1996) found that older consumers have greater tendency for Curiosity Motivated Behavior (Exploration through shopping and Information seeking) whereas less educated consumers search and use less of information. Gianfranco and Mitchell(2005) found that older consumers are more prone to information overload and Solomon(1994) supported his findings by commenting that older people love searching information 'Just for the fun of it.' Zuckerman, Eysenck, and Eysenck, (1978) found that men reflect higher OSL as compared to women. Zukerman (1988) developed a biochemical explanation for the same regarding age and gender. He reviewed some research which explains that OSL is significantly negatively correlated with the level of the enzyme monoamine oxidase (MAO) and females have higher levels of MAO than males at all spans of life. Also, MAO levels increase with age. Single and divorced people show high OSL (Zuckerman. and Neeb, 1980). Steenkamp et al (2001) found that income has a positive effect on Exploratory Consumer Behavior and OSL. OSL decreases with age. More educated people reflect higher Exploratory Tendencies and higher OSL. Males try new brands and purchase new financial products hence high on OSL whereas females have higher patronage for grocery stores. The researcher found that Single and Divorced people are low on exploratory behavior may be due to time-pressure they face. Household size is negatively associated with Exploratory behavior in case of Black people and whereas household size has a positive association with Exploratory behavior in case of whites. {Tuteja G. (2015)} Generation Y is higher on innovativeness, exploration through shopping, interpersonal communication, brand switching and information seeking. People in the early stages of life are keener in getting the latest technology and the latest or the known brand of mobile phones that increases their exploratory tendencies while shopping. Individuals of Gen Y are keener on gathering information when it comes to any new technology or rather any aspect of life. Gen Y is keener on the branded products and tends to switch between various brands based on the awareness created by the peers.

To conclude the above, Raju has correlated age, employment status, and income with OSL but did not find ant correlation with gender or any other demographic factor. However, some later researchers have worked on the same and have found correlation between these factors such as younger, higher educated people show higher OSL than elder, less educated ones. Also, males show a higher OSL in terms of financial products while females have higher OSL towards grocery and other household items. Zukerman (1988) developed a biochemical explanation of the gender bias on OSL based on the level on an enzyme named monoamine oxidase (MAO) which is significantly negatively related to OSL. This explains the high OSL in males than females.

Table 1: Summary depicting relationship between various demography's and OSL/ Exploratory Tendencies

Demographic Variable	OSL/Exploratory Tendency Variable	Relationship	Study
	OSL	U-shaped	Kish & Busse
	OSL	Positive	Raju
	Interpersonal communication	Positive	Surajit et al
	Risk taking/innovativeness	Negative	Robertson,Im et al
	Information seeking	Positive	Solomon, Walsh & Mitchell
	OSL	Negative	Steenkamp et al
	Exploration through shopping	Positive	Urbany et al
Education	OSL	Positive	Kish & Busse
	OSL	Positive	Raju
	Exploratory Tendencies	No effect	Surajit et al
	Risk taking/ innovativeness	Positive	Robertson, Im et al
	Variety	Positive	Ailawadi et al
	Information seeking	Positive	Urbany et al
	OSL/Explratory Tendencies	Positive	Steenkamp et al
	Information seeking	Negative	Moorman, Walsh & Mitchell
Income	OSL	No Correlation	Raju
	Exploratory Tendencies	No effect	Surajit et al.
	OSL/ Exploratory Tendencies	Positive	Steenkamp
	Risk taking/ innovativeness	Positive	Im et al.
Employment	OSL	Positive	Raju
Gender (Males)	Risk taking/ innovativeness	Positive	Surajit et al.
	OSL	Positive	Zuckerman, Eysenck, & Eysenck
	OSL	Positive	Steenkamp et al.
Marital Status (Single/Divorced)	Exploratory Tendencies	Low	Steenkamp et al

Research Objectives:

1.To determine the factors influencing Exploratory Tendencies of consumers towards watches

2.To study the impact of demographics on identified factors influencing exploratory tendencies of watches.

Hypothesis

$H0_1$: There is no significant difference between the mean scores of various Exploratory Tendencies for different age groups towards watches.

$H0_2$: There is no significant difference between the mean scores of various Exploratory Tendencies for different genders towards watches.

$H0_3$: There is no significant difference between the mean scores of various Exploratory Tendencies for different marital status towards watches.

$H0_4$: There is no significant difference between the mean scores of various Exploratory Tendencies for different educational qualification towards watches.

$H0_5$: There is no significant difference between the mean scores of various Exploratory Tendencies for different primary engagement towards watches.

$H0_6$: There is no significant difference between the mean scores of various Exploratory Tendencies for different income groups towards watches.

Sample and Data Collection:

Data were collected from the urban population of New Delhi between the age group of 21-60 years, who were highly involved in making the purchase decision of watches. The same was made sure by verbal communication with the respondent before giving the questionnaire. The Population for the present study comprised people living in Delhi. Delhi is divided amongst 9 districts as per the municipal corporation of Delhi: North West, North, North East , East, New Delhi, Central, West, South west, South. Sample size of 100 respondents was selected from each district. A personal survey was conducted to collect the data from the respondents.

Before starting the data collection for the study the questionnaire was pre-tested to assess the validity and reliability. Also, any possibility of any weakness can also be ruled out at this stage. The statements of the questionnaire were discussed with the experts of marketing research and the suggestions given by them were incorporated i.e. some statements were discarded. After the final approval from experts, pilot study was undertaken on 65 respondents to ensure the appropriateness of the statements. The questionnaire was revised and the final questionnaire was administered to 950 respondents to get a targeted 875 valid responses (92.1% response). For reliability Cronbach's Alpha value was checked which came out to be 0.857 (Table 2)

Table 2: Reliability Statistics

Cronbach's Alpha	N of Items
.857	34

Instrument:

The first part of the questionnaire contained forced choice questions on demographics (age, educational qualification, Income, primary engagement)of the respondents. The second part of the questionnaire measured exploratory tendencies of consumers. The scale developed by Raju was adapted to measure exploratory tendencies of consumers. The original scale was modified in content and the number of statements used to serve the emerging consumer markets. Also, the original scale talks about exploratory tendencies of consumers in general but this paper assesses the relationship of demographics of consumers and their exploratory tendencies with respect to watches. Changes in the questionnaire were made under the guidance of experts.

Analysis of the Data:

Data was checked for outliers. No outlier was found in the data as there was a specific scale with options, so there was no chance of an outlier. No missing frequencies were reported as the respondents were requested not to leave any response unmarked and the same was taken care of while collecting the questionnaires from respondents.

The data was analyzed by software namely SPSS version 19.0 and Descriptive Analysis, One-Way ANOVA and Independent sample T-test were used to test the hypotheses. Cronbach Alpha Test was used to test the reliability of the scale. The analyses were performed at 95% confidence level which is generally accepted level of confidence in social sciences research. The questionnaire comprised 16 negative statements and reverse coding was done for negative statements.

Justification of this Research:

In the current scenario of cut-throat competition and marketing – dominant markets the survival is dependent not on their ability to understand the customer. It is enviable in this strong competitive environment to target different

demographic variables and draft the different marketing strategies for different demographic segments. The validity of the scale differs between countries as the cultural environment is different in different countries. No study has been conducted so far which test Exploratory Tendencies of Consumer *with* special reference to watches in the Indian context specifically Delhi. The scale used in this research will be pre-tested and modified to suit the context of Indian consumers, which will enable future researchers to use these measures in the Indian context. The current study contributes to filling the paucity of consumer behavior research in ECM settings. The cultural environment in which the current scales to assess the exploratory tendencies was developed and tested is also a major factor that could affect their validity across different countries.

Findings and Interpretations:

Profile of Respondents

Out of 875 questionnaires collected 55% were males (483) and 45% were females (392) with 34% of the respondents in the age bracket of 21-30 years (297), 22% in 31-40 Years, 26% in 41-50 years and 18% in 51-60 years. 58.7% of the respondents were married and 45.8% of the total respondents were graduates followed by 31.9% postgraduates and 16% were professionally qualified. 28% of the respondents were service class and almost equal percentages of respondents were students (19.8%) and were in Business (20.2%). Majority of the respondents belonged to the income group of less than 3 lakhs (32%) with the least number of respondents in the income bracket of above 14 lakhs (13.4%).

Objective 1: To determine the factors influencing Exploratory Tendencies of consumers towards watches.

A. Factor Analysis

Factor analysis also called exploratory factor analysis (EFA) is a class of procedures used for reducing and summarizing data. Each variable is expressed as a linear combination of the underlying factors. Likewise, the factors themselves can be expressed as a linear combination of the observed variables (Malhotra Naresh, 2013).

Table 3: Factor Loadings and KMO

Name of the Dimension	Item No.	Statements	Factor Loadings	Reliability	KMO
Information Seeking	23	I usually skip all advertisements of watches without reading/viewing them.	.896	0.954	0.896
	12	I often read the information on the tag of the watches just out of curiosity.	.881		
	27	I don't care to find out what type of watches my friends use	.881		
	32	I rarely read advertisements that just seem to contain a lot of information.	.880		
	33	When I hear about a new watch, I take advantage of the first opportunity to find out more about it.	.871		
	30	I often read advertisements of watches just out of curiosity.	.846		
	18	I generally watch all advertisements on wat ches just to know what is new about it.	.836		
	6	I get very bored listening to others about their styles of watches.	.827		
Innovativeness	20	A new watch is not something I would be eager to find out about.	.882	0.939	
	29	When I see a new watch somew hat different from the usual. I investigate it.	.867		
	8	I am the kind of person who would try any new style of watch once.	.858		
	25	I would rather wait for others to try a new style of watch than try it myself.	.851		

	31	Investigating new style of watch is generally a waste of time.	.842		
	14	I am very cautious in trying new/different watches.	.836		
	2	When I see a new or different style of watch on display. I often pick it up just to see what it is like.	.821		
Repetitive Behavior Proneness	19	I get tired of eating the same watch every time.	.874	0.907	
	13	I get bored with buying the same watch even if it is good.	.861		
	7	If I like a watch, I rarely switch from it just to try something different.	.847		
	1	Even though watches are availabl e in a number of different flavors. I always tend to buy the same flavor.	.843		
	24	A lot of the time I feel the urge to buy something really different from the watch I usually buy.	.816		
Risk Taking	34	I enjoy taking chances in buying unfamiliar styl e of watches just to get some variety in my purchases.	.855	0.896	
	21	I never buy a style of watch which I don't know about at the risk of making a mistake.	.854		
	9	I feel comfortable to purchase the style of watches I usually wear.	.852		
	26	If I buy watch. I will buy only well-known brands.	.830		
	3	I like to try the most unfamiliar style of watches, even if I am not sure I would like them.	.806		
Interpersonal	11	I like introducing new styles of watches to my friends.	.859	0.785	
Interpersonal Communication	11	I like introducing new styles of watches to my friends.	.859	0.785	
	17	My friends and neighbors often come to me for advice on different styles of watches.	.844		
	5	I don't like to talk to my friends about styles of my watches.	.760		
Exploration Through Shopping	10	I hate looking around for the new styles of watches , as I don't think it is worth spending time.	.841	0.791	
	4	I like to shop around and look for the new styles of watches at display.	.823		
	16	I shop around a lot for my watches just to find out more about the latest styles.	.803		
Brand Switching	22	I enjoy exploring several styles of watches while shopping.	.836	0.764	
	15	I would rather stick with the same style of watch I usually buy than trying something I am not very sure of.	.826		
	28	I would probably like to try all the different styles of w atches, if I get the opportunity to purchase lot of watches.	.772		

Objective 2: Impact of demographics on identified factors influencing exploratory tendencies of watches.

EFFECT OF AGE ON VARIOUS VARIABLES OF EXPLORATORY TENDENCIES TOWARDS WATCHES

$H0_1$: There is no significant difference between the mean scores of various Exploratory Tendencies for different age groups towards watches.

TABLE 4: ANOVA between Age and various variables of Exploratory Tendencies towards watches and the respective mean scores

Variables	Levene Statistic	Sig.	F	Sig.	Welch	Sig.
Innovativeness	8.023	0	4.523	0.004	4.809	**0.003**
Mean Score of 21-30 Years	2.967772					
Mean Score of 31-40 Years	2.729165					
Mean Score of 41-50 Years	2.685713					
Mean Score of 51-60 Years	2.664346					
Exploration_Through_Shopping	1.91	0.126	5.815	**0.001**	5.831	0.001
Mean Score of 21-30 Years	3.226714					
Mean Score of 31-40 Years	3.118059					
Mean Score of 41-50 Years	2.949854					
Mean Score of 51-60 Years	2.906254					
Interpersonal_Communication	0.667	0.573	3.588	**0.013**	3.627	0.013
Mean Score of 21-30 Years	3.019174					
Mean Score of 31-40 Years	2.938272					
Mean Score of 41-50 Years	2.891666					
Mean Score of 51-60 Years	2.725696					
Information_Seeking	9.743	0.000	5.723	0.001	6.289	**0.000**
Mean Score of 21-30 Years	3.225589					
Mean Score of 31-40 Years	2.928906					
Mean Score of 41-50 Years	2.904867					
Mean Score of 51-60 Years	2.893229					

Analysis of Variance in TABLE 4 showed that Innovativeness, Exploration through shopping, interpersonal communication and information seeking differ significantly on the basis of age. On the remaining variables no significant difference was observed between the age groups. So, null hypothesis stands REJECTED for Innovativeness, Exploration through shopping, interpersonal communication and information seeking.

From post hoc analysis of age it was found that there was a significant difference in innovative behavior between the age groups of 21-30 years from 41-50 years and 51-60 years. Respondents in the age group 21-30 show a greater tendency of being innovative for various technology products.

As per the results it is evident that respondents in the age group of 21-30 years differ significantly from respondents of 41-50 years and 51-60 years in exploration while shopping. Shopping and exploration goes hand in hand and also somewhat related to age. Here respondents in the age group of 21-30 explore more while shopping.

In case of Interpersonal communication significant difference was seen between the age groups 21-30 years and

51-60 years. Younger group of respondents between the age group of 21-30 years have more tendencies of interpersonal communication (M=3.0191) as compared to other age groups. Young people have time at their disposal for interaction with peers that augment their tendencies to explore.

As per the post hoc table there is a significant difference between the information seeking tendencies of the respondents in the age group of 21-30 years and between the respondents in the age group of 31-40 years, 41-50 years and 51-60 years. The respondents in the age group of 21-30 years are highest on information seeking tendencies. This can be contributed to the fact that younger generation in the age group of 21-30 and 31-40 years is most fascinated by variety and brands of products like watches.

EFFECT OF GENDER ON VARIOUS VARIABLES OF EXPLORATORY TENDENCIES TOWARDS WATCHES

$H0_2$: There is no significant difference between the mean scores of various Exploratory Tendencies for different genders towards watches.

TABLE 5: Group Statistics of Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means				
Variables		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Innovativeness	Equal variances assumed	0.337	0.561	-2.296	873	**0.022**	-0.16681	0.072652
	Equal variances not assumed			-2.301	842.833	0.022	-0.16681	0.072499
	Mean Score of Males							2.710735
	Mean Score of Females							2.877548
Repetitive_Behavior_Proneness	Equal variances assumed	5.228	0.022	-2.533	873	0.011	-0.17469	0.068977
	Equal variances not assumed			-2.545	850.515	**0.011**	-0.17469	0.068642
	Mean Score of Males							3.182143
	Mean Score of Females							3.007453
Exploration_Through_Shopping	Equal variances assumed	3.622	0.057	-2.734	873	**0.006**	-0.17474	0.063918
	Equal variances not assumed			-2.716	813.565	0.007	-0.17474	0.064329
	Mean Score of Males							2.994483
	Mean Score of Females							3.169219

The above table 5 on Independent sample T-test table reveals that there is a significant difference in the mean scores of Innovativeness, repetitive behavior Proneness and exploration through shopping for both males and females. Hence we reject our NULL hypothesis for innovativeness, repetitive behavior proneness and exploration through shopping. Females have more innovative behavior (M=2.8775).Males are higher on repetitive behavior

proneness (M=3.1821) .Also exploration through shopping are higher in females (M=3.1692). Traditionally it has been observed that males are more adaptive to technical products such as watches. However, this trend is seeing a shift towards females that are showing more innovative behaviors than males when it comes to products like watches.

EFFECT OF MARITAL STATUS ON VARIOUS VARIABLES OF EXPLORATORY TENDENCIES TOWARDS WATCHES

$H0_3$: There is no significant difference between the mean scores of various Exploratory Tendencies for different marital status towards watches.

TABLE 6: Group Statistics of Marital Status

		Levene's Test for Equality of Variances		t-test for Equality of Means				
Variable		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Err or Difference
Exploration_Through_Shopping	Equal variances assumed	3.835	0.051	-2.781	873	**0.006**	-0.1795	0.064557
	Equal variances not assumed			-2.751	744.577	0.006	-0.1795	0.065253
	Mean Score of Married	2.998706						
	Mean Score of Unmarried	3.178211						

Independent sample t-test shows that there is a significant difference in exploration through shopping on the basis of marital status. On rest of the variables no significant difference was seen. Hence, null hypothesis stands rejected for exploration through shopping (Table 6).

Results also show that unmarried group (M=3.1782) was more on exploratory tendencies as compared to their married counterparts (M=2.9987). Unmarried respondents have all the favorable attributes that contribute to more exploratory tendencies. This is attributed to the fact that singles have more leisure time to spend on product like watches.

EFFECT OF EDUCATIONAL QUALIFICATION ON VARIOUS VARIABLES OF EXPLORATORY TENDENCIES TOWARDS WATCHES

$H0_4$: There is no significant difference between the mean scores of various Exploratory Tendencies for different educational qualification towards watches.

Analysis of Variance showed that, all the variables of exploratory tendencies do not differ significantly on the basis of education which means various exploratory tendencies are not affected by educational qualification. So, null hypothesis stands ACCEPTED for various exploratory tendencies.

EFFECT OF INCOME ON VARIOUS VARIABLES OF EXPLORATORY TENDENCIES TOWARDS WATCHES

$H0_5$: There is no significant difference between the mean scores of various Exploratory Tendencies for different income groups towards watches.

TABLE 7: ANOVA between Income and various variables of Exploratory Tendencies towards watches

Variables	Levene Statistic	Sig.	F	Sig.	Welch	Sig.
Information_Seeking	6.221	0.000	6.855	0.000	6.115	**0.000**
Mean Score of Inc. Less than 3 Lacs	3.179018					
Mean Score of Inc.B/W 3-5 Lacs	3.108280					
Mean Score of Inc.B/W 5-9 Lacs	3.009409					
Mean Score of Inc.B/W 9-14 Lacs	2.954630					
Mean Score of Inc.Above 14 Lacs	2.580128					

From ANOVA table 7 it can be concluded that income varies significantly for information seeking. All other tendencies of exploratory behavior do not differ significantly on the basis of Income. So, our NULL hypothesis stands rejected for information seeking. For further analysis we will use post hoc table.

Post Hoc table shows that there is a significant difference in the information Seeking of respondents having income above 14 lakhs and respondents with income less than 3 lakhs, respondents with income between 3-5 lakhs and respondents in the income group of 5-9 lakhs. People in income group of Less than 3 Lakhs show the highest information seeking tendencies. Information seeking tendencies show a decreasing trend as the income groups are increasing. This is due to the sheer presence of disposable income with higher income group that can be spent on purchase of products like watches.

EFFECT OF OCCUPATION ON VARIOUS VARIABLES OF EXPLORATORY TENDENCIES TOWARDS WATCHES

$H0_6$: There is no significant difference between the mean scores of various Exploratory Tendencies for different Occupation towards watches.

TABLE 8: ANOVA between Occupation and various variables of Exploratory Tendencies towards watches

Variables	Levene Statistic	Sig.	F	Sig.	Welch	Sig.
Innovativeness	4.076	0.003	2.852	0.023	3.176	**0.014**
Mean Score Business	2.610166					
Mean Score Service	2.806964					
Mean Score Professionals	2.754283					
Mean Score Housewives	2.750805					
Mean Score Students	2.988439					
Risk_Taking	3.378	0.009	3.226	0.012	3.143	**0.015**
Mean Score Business	2.989831					
Mean Score Service	2.773554					
Mean Score Professionals	2.853333					
Mean Score Housewives	3.066165					
Mean Score Students	2.757225					

Information_Seeking	8.364	0	4.522	0.001	4.649	**0.001**
Mean Score Business	2.831767					
Mean Score Service	3.128099					
Mean Score Professionals	2.906667					
Mean Score Housewives	2.877825					
Mean Score Students	3.234827					

Analysis of Variance in TABLE 8 showed that Innovativeness, risk taking and information seeking differ significantly on the basis of occupation. So, null hypothesis stands REJECTED for Innovativeness, risk taking and information seeking.

Post hoc reveals that there is a significant difference between students and people who are involved in business. Students have more time at their disposal and watches now-a -days are considered to be a fashion accessory. So, they like to be innovative and try different varieties of watches. Post hoc table reveals that there is a significant difference between the risk taking tendencies of housewives and service class. Housewives are the ones taking the maximum risk when it comes to watches. Service class has the least risk taking ability in terms of dressing which might have a bearing on the money spending capacity apart from other circumstances as regards time spent in office, work culture etc.

Post hoc table reveals that students differ significantly from housewives and businessmen with regard to information seeking. People who are young explore more than compared to elderly group as they have enough leisure time with them to discuss their purchases.

Conclusion and Suggestions:

Watches are to some extent a technical as well as a fashion object that fascinates the younger generation who are more innovative and show such behaviors quite often out of curiosity, peer pressure and fashion statement. . This, in general, is seen that people in their early stage of life are more enthusiastic, vibrant, dynamic and agile. They are keen on finding new things. The purpose of buying a new watch may vary from a mere show off to some utility but youngster tends to explore a lot about various features, look and feel as well as brands. People in the said age group are keen to explore various brands and types of watches to satisfy their hedonic desires. However, as people age, this tendency keeps on reducing due to various factors such as reduced mobility, agility, interest and technology etc. Younger respondents have less of household responsibilities; they have a higher level of energy and time to tend to have more interpersonal communication tendencies. Individuals in these age group posses a great deal of aspiration and curiosity that force them to look for alternatives. This also arises due to high level of peer interactions that brings in the hedonic side. With increasing awareness on women empowerment and education a shift in the traditional male oriented marketing of products like watches is seen as markets are focusing on women for even male watches as they see them as more innovative and active in purchase decisions. As males, due to their high time consuming job profiles, spend less time in shopping, the onus shifts to women. With greater flexibility in traditional taboos of being only a home maker, the culture is shifting to more liberal ideas. Moreover, watches act as an accessory in their wardrobes due to their fashion appeal. Now-a-days women are seen exploring more on such products. Increased education, awareness and economic empowerment of women, the exploratory tendencies have also seen a rise. They being the purchaser of products tend to be more explorative than their male counter parts. So apart from the utility, it also adds to the style statement of females and they try to explore various styles, colors, types and brands of watches to satisfy the exploratory tendencies. Lesser disposable income of lower income groups does not allow them to spend heavily on luxury brands of watches. They generally seek lot of information before taking a decision to purchase a watch because of limited disposable income.

The marketers should position their products on styles of watches to attract younger generation as they are the ones who are most innovative when it comes to styles. The styles should be such that can influence youngsters who explore much while shopping and discuss amongst peers. The advertisements related to watches should target youngsters since they are information hungry and seek to have the as much information they can get before actually buying a product. Marketing managers should focus on the styles that are relevant to females as they are found to be more innovative and tend to explore more while shopping. At the

same time they should keep in mind the styles that are relevant to males and alter the styles that are similar to the already existing version as males are found to be exhibiting repetitive buying behavior. They should also market their products with varying levels of technological advancements as well as designs to cater to the higher income groups for whom watches have a hedonic appeal.

Marketers should advertize their products in such media that is accessible to lower income groups who tend to seek the most information while shopping. Examples of mass media can be newspapers, television, radio and social networking sites etc. Students being in the early stages of their lives exhibit similar tendencies as youngsters. Marketers should focus on advertisements through social networking sites and television since students seek more information and are innovative in their buying behaviors.

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Comprehensive 360-Degree Appraisal: Management Educational Institutions

Dr. Vidya R. and Sharath Ambrose

Abstract

The study is to explore through the faculties of the management institutions, which are able to respond to the challenges of the educational environment and the effectiveness in management of performance at institutions. The respondents are his/her Peers, Superior/Management, Self, Students, Teaching Experts, Industrial Experts and Alumni. A Comprehensive 360-degree appraisal framework to assist the management optimizing the right variables and opportunities is preferred as a solution. The study is an attempt to implement the Comprehensive 360-degree model as a holistic appraisal system in academics especially in selected management colleges.

Keywords: 360-degree appraisal, performance, framework, model, holistic system, faculty.

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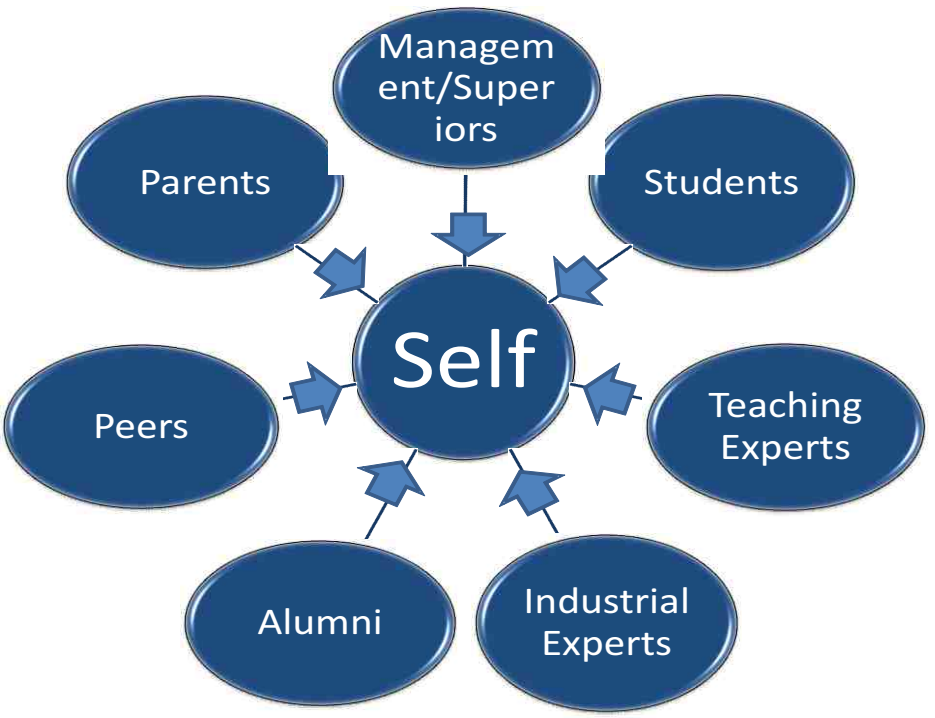
New system of appraisal and feedback offers huge benefits for relatively little investment. It will provide constructive feedback and development opportunities to teachers and principals. It will bring overdue recognition to effective teachers, spreading good practices through their school and beyond. It will address underperformance through a continual focus on improving teaching and learning. Above all, it will raise student performance. Our schools and students deserve no less. The *circle*, or perhaps more accurately the *sphere,* of feedback sources consists of superiors/Management, students, peers, teaching experts, industrial experts, parents, alumni and one's self. It is not necessary, or always appropriate, to include all of the feedback sources in a particular appraisal program. The organizational culture and mission must be considered, and the purpose of feedback will differ with each source. For example, students assessments of a supervisor's performance can provide valuable developmental guidance, peer feedback can be the heart of excellence in teamwork, and customer service feedback focuses on the quality of the team's or agency's results. The objectives of performance

appraisal and the particular aspects of performance that are to be assessed must be established before determining which sources are appropriate. The Comprehensive 360-degree model constructed by totaling supplementary enumerators with basic enumerators (Superior/Management, Peers, Students and Self) which is used in earlier 360-degree feedback model. In this model supplementary enumerators (Teaching experts, Industry experts, Parents and Alumni) are engaging vital role to provide reliable feedback to faculties' performance and they support to develop their performance.



2. Literature review

2.1 In "Multi source feedback based performance appraisal system using Fuzzy logic decision support system," Meenakshi focused on the 360-degree feedback appraisal process affect on human resource practices and its methodology that is to know the employee appraisal and employee development. Used in employee performance appraisals, the 360-degree feedback methodology is differentiated from traditional, top-down appraisal methods in which the supervisor responsible for the appraisal provides the majority of the data. It is also explored the information gained from other sources to provide a fuller picture of employees' performances. Similarly, when this technique used in employee development it augments employees' perceptions of training needs with those of the people with whom they interact.

2.2 In "Fuzzy Logic Modeling for Performance Appraisal Systems – Framework for Empirical Evaluation" Adnan and Minwir mentioned few other methods including management-by-objectives (MBO), work planning and review, 360o appraisal and peer review. With all the available techniques, it is essential to understand that different organization might use different technique in assessing staff performance. Since all the techniques mentioned above has their own advantages and disadvantages, most organizations might mix and match different techniques for their own performance appraisal system that can fulfill their organizational needs.

2.3 Khairul and Qiang in "Data-Driven Fuzzy Rule Generation and Its Application for Student Academic Performance Evaluation" stated that, some potential aims of performance appraisal might include identifying particular behavior or job. Various techniques or methods have been used by human resource management experts to evaluate the performance of an employee.

2.4 Nathalie Abi Saleh Dargham in "Effective Management of the performance appraisal process in Lebanon: An Exploratory study" mentioned that Performance appraisal has increasingly become part of a more strategic approach to integrating HR activities and business policies and may now be seen as a generic term covering a variety of activities through which organizations seek to assess employees and develop their competence, enhance performance and distribute rewards Thus, both practice and research have moved away from a narrow focus on psychometric and evaluation issues to developmental performance appraisal which may be defined as any effort concerned with enriching attitudes, experiences, and skills that improves the effectiveness of employees.

3. Objectives

Objectives Comprise:

1. To understand the value addition in 360-degree appraisal system,
2. To provide feedback for faculty by using 360-degree feedback process being used in management institution, and
3. To develop strategies to improve performance of employees as well as institutions.

4. Hypothesis:

4.1 H0: There is no significant deviation from Actual Basic score to Actual Advanced score ($\mu_d = 0$)
H1: There is a significant positive deviation from Actual Basic score to Actual Advanced score ($\mu_d > 0$)
4.2 H0: There is no significant deviation from Weighted Basic score to Weighted Advanced score (μd 0)
H1: There is a significant positive deviation from Weighted Basic score to Weighted Advanced score (μd > 0)
4.3 H0: There is no significant deviation from Total Basic score to Total Advanced score ($\mu_d = 0$)
H1: There is a significant positive deviation from Total Basic score to Total Advanced score ($\mu_d > 0$)

4. Research methodology

The study explore the adoption of performance management system in management institutions in order to improve the efficiency and effectiveness in the performance of employees with reference to 360-degree as a holistic approach to performance management system. The data obtained by the selected management institutions in shivamogga district. The research is pursued on exploratory research design. The size of respondents based on average pro-rata basis. A designed questionnaire has been administered to enumerators like, Basic enumerators Superior/Management, Peers, Students, Self, and Supplementary enumerators Parents, Teaching experts, Industrial Experts and Alumni to gather accurate responses from respondents. To test the hypothesis the present study used T-test method and weights based on the parameters selected by the factors (Basic enumerators and supplementary enumerators) the study uses tools like Tabular method, scoring method and Weights methods to interpret the data systematically and draw the meaningful conclusion.

5. Analysis and Discussion:

Table 6.1: List of Basic and supplementary enumerators and appraisal parameters.

SL. NO.	Enumerators		Parameters
1.	Superior/Management	a.	Planning and preparation of course
		b.	Designing student centric instructional content
		c.	Marinating records
		d.	Professional responsibilities
		e.	Communication with manag ement and contributing to institution development
		f.	Maintaining room discipline and control of class

2.	Peers	a.	Intra-personal relationship
		b.	Mutual trust
		c.	Co-operation and Co-ordination with them
		d.	Communication
3.	Students	a.	Preparation to student centric instructional content/course objectives.
		b.	Selecting instructional goal.
		c.	Assessing student learning with skills and knowledge
		d.	Class room environment (creating healthy environment to build rapport)
		e.	Communication
		f.	Allowing students to participate and providing feedback (questioning and discussion)
		g.	Motivation and encouragement
4.	Parent/Guardian	a.	Students academic progress
		b.	Treating students with respect and care support to resolve interpersonal conflicts
		c.	Influencing and modifying students behavior
		d.	Mentoring and counseling
		e.	Faculty interaction with parents
5.	Teaching Experts	a.	Academic achievements
		b.	Scholarly activities
		c.	Participation in Conferences/Seminar/Workshops
		d.	Preparation of student development program
		e.	Industrial tie-up's
6.	Industrial/Corporate experts	a	Application based teaching
		b.	Industrial workshops/Conferences/Seminar
		c.	Student's performance in campus recruitment.
		d.	Faculty training and development program
7.	Alumni	a.	Application based teaching
		b.	Industrial tie-up
		c.	Value based teaching
		d.	Imbibing corporate skills & culture
8.	Self	a.	Goal content
		b.	Teaching strategies
		c.	Planning @ preparing for student centric course
		d.	Marinating class room discipline & control of class
		e.	Students performance/result
		f.	Teaching aids/Techniques engaging students in learning
		g.	Demonstrating flexibility and responsibilities

Table 6.2: Top three priority parameters listed from basic and supplementary enumerators

Superior		
Parameter	Weights	Rank
Planning and preparation of course	0.20	1
Designing student centric instructional content	0.18	2
Maintaining room discipline and control of class	0.16	3
Self		
Parameters	Weights	Rank
Teaching strategies	0.17	1
Students performance/result	0.15	2
Marinating class room discipline & control of class	0.14	3
Students		
Parameters	Weights	Rank
Preparation to student centric instructional content/course objectives.	0.16	1
Assessing student learning with skills and knowledge	0.15	2
Communication	0.14	3
Peers		
Parameters	Weights	Rank
Mutual trust	0.28	1
Co-operation and Co-ordination with them	0.26	2
Intra-personal relationship	0.24	3
Parents		
Parameters	Weights	Rank
Faculty interaction with parents	0.28	1
Treating students with respect and care support to resolve interpersonal conflicts	0.26	2
Mentoring and Counseling	0.23	3
Industrial Experts		
Parameters	Weights	Rank
Industrial workshops/Conferences/Seminar	0.27	1
Faculty training and development program	0.26	2
Application based teaching	0.24	3
Teaching Experts		
Parameters	Weights	Rank
Academic achievements	0.23	1
Participation in Conferences/Seminar/Workshops	0.22	2
Industrial tie-up's	0.21	3
Alumni		
Parameters	Weights	Rank
Application based teaching	0.28	1
Value based teaching	0.25	2
Industrial interface	0.24	3

Source: primary data

7. Hypothesis testing:

1. H0: There is no significant deviation from Actual Basic score to Actual supplementary score ($\mu_d = 0$) H1: There is a significant positive deviation from Actual Basic score to Actual Supplementary score ($\mu_d > 0$)

Table 7.1: T-test for Actual basic score and Actual Supplementary score.

Actual Basic Score (x_1)	Actual Supplementary score (x_2)	D	(d- $\bar{d}$)	(d- $\bar{d}$)^2
30	26	4	1.38	1.89
27	20	7	4.38	19.14
30	17	13	10.38	107.64
27	20	7	4.38	19.14
28	18	10	7.38	54.39
26	18	8	5.38	28.89
18	17	1	-1.63	2.64
22	23	-1	-3.63	13.14
29	21	8	5.38	28.89
25	18	7	4.38	19.14
21	18	3	0.38	0.14
18	17	1	-1.63	2.64
12	26	-14	-16.63	276.39
17	21	-4	-6.63	43.89
24	25	-1	-3.63	13.14
15	21	-6	-8.63	74.39
24	16	8	5.38	28.89
18	19	-1	-3.63	13.14
17	27	-10	-12.63	159.39
28	16	12	9.38	87.89
25	18	7	4.38	19.14
22	17	5	2.38	5.64
17	19	-2	-4.63	21.39
19	18	1	-1.63	2.64
Total		Σd = 63.00	0.00	Σ (d- $\bar{d}$)^2 =1043.63
Mean		$\bar{d}$ =2.63		

Source: Primary data

$$s = \sqrt{\frac{\sum(d - \bar{d})2}{n - 1}}$$

$$s = \sqrt{\frac{1043.63}{24 - 1}}$$

$$\underline{\underline{s = 6.74}}$$

$$t_{(n-1)} = \frac{|d - \mu d|}{\frac{s}{\sqrt{n}}}$$

$$t = \frac{|2.63 - 0|}{\frac{6.74}{\sqrt{24}}} = 1.91|$$

Significance level = 5% ($t_c = 1.71$)

Interpretation: $t_{obt} > tc$, H_0 is rejected

By testing hypothesis it indicates to reject the null hypothesis as" t_{obt} "is greater than "t_c ". So it can be infer that there is a positive deviation from actual basic enumerator's scores to actual supplementary enumerators scores, hence it is understood that relatively supplementary enumerator's scores have a significant impact on faculty members' appraisal.

Hypothesis - 2H0: There is no significant deviation from Weighted Basic score to Weighted Advanced score ($\mu_d = 0$)H1: There is a significant positive deviation from Weighted Basic score to Weighted Advanced score ($\mu_d > 0$).

Table 7.2: T-test for Actual Weighted basic score and Actual Weighted Supplementary score.

Weighted Basic Score (x1)	Weighted Supplementary Score (x2)	d	(d- $\bar{d}$)	$(d-\bar{d})^2$
17	19	-2.14	-0.27	0.07
16	14	1.48	3.35	11.22
17	12	4.59	6.46	41.73
16	15	0.82	2.69	7.24
16	13	2.69	4.56	20.79
16	13	2.28	4.15	17.22
9	12	-3.44	-1.57	2.46
13	17	-3.96	-2.09	4.37
16	16	0.59	2.46	6.05
15	13	1.23	3.10	9.61
11	13	-1.92	-0.05	0.00
10	13	-2.74	-0.87	0.76
7	19	-12.36	-10.49	110.04
11	15	-4.66	-2.79	7.78

14	18	-3.91	-2.04	4.16
8	15	-7.79	-5.92	35.05
13	12	1.05	2.92	8.53
10	14	-4.08	-2.21	4.88
9	20	-10.7	-8.83	77.97
16	12	4.16	6.03	36.36
14	13	1.1	2.97	8.82
13	13	0.17	2.04	4.16
9	14	-4.9	-3.03	9.18
11	13	-2.44	-0.57	0.32
Total		$\Sigma d = -44.88$	0.00	$\Sigma (d- \bar{d})^2 = 428.79$
Mean		$\bar{d} = -1.87$		

Source: primary data

$$s = \sqrt{\frac{\Sigma(d-\bar{d})2}{n-1}}$$

$$s = \sqrt{\frac{428.79}{24-1}}$$

$$s = 4.32$$

$$t_{(n-1)} = \frac{|d-\mu d|}{\frac{s}{\sqrt{n}}}$$

$$t = \frac{|-1.87-0|}{\frac{4.32}{\sqrt{24}}} = 2.12$$

Significance level = 5% ($t_c = 1.71$)

Interpretation: $t_{obt} > t_c$, H_0 is rejected

By testing hypothesis it indicates to reject the null hypothesis as" t_{obt}" is greater than "t_c". So it can be inferred that there is a positive deviation from weighted basic enumerator's scores to weighted supplementary enumerators scores, hence it is understood that relatively supplementary enumerator's scores have a significant impact on faculty appraisal.

Hypothesis - 3H0: There is no significant deviation from Total Basic score to Total Advanced score ($\mu_d = 0$)H1: There is a significant positive deviation from Total Basic score to Total Advanced score ($\mu_d > 0$)

Table 7.3: T-test for Actual Total basic score and Actual Total Supplementary score.

Total Basic Score (x1)	Total Supplementary Score (x2)	d	(d- d)	(d- d)2
56	37	19.46	4.67	21.85
47	30	16.56	1.77	3.15
47	29	17.81	3.02	9.15
47	31	16.14	1.35	1.83
46	29	17.29	2.50	6.27

44	29	14.86	0.07	0.01
35	21	13.56	-1.23	1.50
45	30	14.62	-0.17	0.03
50	32	17.99	3.20	10.27
43	28	15.15	0.36	0.13
39	25	14.14	-0.65	0.42
35	23	12.06	-2.73	7.43
38	26	11.98	-2.81	7.87
38	26	11.76	-3.03	9.16
49	33	16.27	1.48	2.20
36	23	12.95	-1.84	3.37
40	25	14.53	-0.26	0.07
37	25	12.48	-2.31	5.32
44	29	14.52	-0.27	0.07
44	28	15.76	0.97	0.95
43	28	15.28	0.49	0.24
39	26	13.43	-1.36	1.84
36	23	13.3	-1.49	2.21
37	24	12.96	-1.83	3.33
Total		Σd = 354.86	0.00	Σ (d- **d**□)^2 98.66
Mean		**d**□ =14.79		

Source: primary data

$$s = \sqrt{\frac{\sum(d - \bar{d})2}{n - 1}}$$

$$s = \sqrt{\frac{98.66}{24 - 1}}$$

$$s = 2.07$$

$$t_{(n-1)} = \frac{|d - \mu d|}{\frac{s}{\sqrt{n}}}$$

$$t = \frac{|14.79 - 0|}{\frac{2.07}{\sqrt{24}}} = 34.98$$

Significance level = 5% (t_c = 1.71)

Interpretation: $t_{obt} > t_c$, H_0 is rejected

By testing hypothesis it indicates to reject the null hypothesis as" t_{obt} "is greater than "t_c" . So it can be inferred that there is a positive deviation from Total basic enumerator's scores to Total supplementary enumerators scores, hence it is understood that relatively supplementary enumerator's scores have a significant impact on faculty appraisal.

8. Findings:

1. Planning and preparation of course, Designing student centric instructional content and Maintaining room discipline and control of class are ranked 1st 2nd & 3rd respectively on the basis of scores given by all the superiors selected from each colleges. Since above said parameters are main responsibilities of superiors to take care through there with the help of faculties.

2. Mutual trust is assigned first rank by peer enumerators as they feel, trusting each other is very much necessary in this profession, because it is indeed to maintain high degree of confidentiality in the daily work.

3. It is found that, Preparation of student centric instructional content is regarded as top priority for among the students fertility as they opine each individuals have their own way of learning styles.

4. It is recorded that, teaching strategies at most important parameters considered by teaching fertility because they feel that it is the USP of any faculty.

5. It is inferred that, Academic achievements is very important for any teachers in this profession as it is basic criteria for his/her career development and also it gives identity in this field.

6. Industrial workshops, conferences and seminars or Industry interface, is regarded as essential factor by industrial experts as they feel faculties responsibilities is to cater to the industrial needs or the professional needs to imbibe the corporate culture in students.

7. It is found that, faculty interaction with parents is measured as key factor by the parents because as they get both academic and behavioral information about their children.

8. Alumni felt that application based teaching methodology practiced by faculty to develop student's practical knowledge to apply in their profession.

9. By testing the hypothesis it is found that by considering actual and weighted supplementary enumerators score's had made positive impact in appraising the faculty. By considering these factors it enables to appraise a faculty better than the former format of 360-degree appraisal.

10. It is found that the second tire of stakeholders of institutions have impacted the scores of faculties significantly. There is a radical positive deviation from the actual scores to weighted scores due to the importance given to the top three parameters by each enumerator in both basic and supplementary.

9. Suggestions:

1. By observing the research findings the new model is reliable to greater extent because it considers scores given by all the enumerators and freely allows to rate the parameters to evaluate and it selects top three best parameters which are scored by all the enumerators. Hence, this new model shall be adopted for any education institution as it does not controls any variable in the due course assessing a faculty.

2. Based on this research findings it is advised to educational institutions to provide financial and non-financial benefits to better performer those who scored highest marks by the various enumerators to improve their performance.

3. At the same time those who scored lowest marks superiors has to take corrective measures to improve faculties performance by providing training programmes and workshops etc.

4. Comprehensive 360-degree appraisal construct well culture and good relationship among the fraternity hence, it helps to institutions to achieve institutional goal.

10. Conclusion:

Comprehensive 360-degree analysis is used in assisting high-level management, to appraise their employees. Utilizing the concept of using multi-factorial evaluation model in the performance appraisal system could ease the changes need to be made in this system whenever it is necessary. This model follows a systematic step in determining a faculty's performance, and therefore, it creates a system of appraisal which is able to consistently produce reliable and valid results for the appraisal process. In order to allow others to use this system, the aspect to be evaluated and the weightage for each of these parameters need to be define in the system before they use.

Finally, the findings of this research indicated many areas to be improved in the appraisal system such as the use of supplementary parameters as a evaluation criteria, an open and genuine feedback system, a greater senior management support, a process perceived as being fair by faculties and finally a structure in which improvements in comprehensive performance appraisals may be facilitated.

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Role of Organizational Climate: Innovative Work Behaviour in Indian Banks

Rita Basu

Abstract

The study is on the role of organizational climate to unleash innovative work behaviour in the Indian banks. Survey was conducted on randomly selected sample of 200 officers of Indian Banks (national and private). Study shows that though, neither organizational climate is highly conducive nor the innovative work behaviour is appreciating but positive climate has significant effect on the development of innovative work behaviour.

Keywords: *Indian Bank, Organizational Climate, Innovative Work Behaviour*

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The enduring and increasing competition; unpredictable growth in globalization has been well documented in the business world during the last decade. Consequently, organizations have been forced to rethink how they produce and deliver products and services as well as how it could be unique in nature to be in a competitive advantage. This picture is generally true even for Indian banking systems; those are also going to revitalize their system to establish facilities in enabling to compete in the global marketplace.

Bankers were operated in the world of beneficially regulated markets and comfortable cartels which restricted competition, reduced risk and virtually guaranteed attractive profits (Middleton, 1994). But, since 1991 the economy has witnessed fundamental changes and the present world of bank has also been ruptured by major three forces: Deregulation – abolishing regulatory barrier and allowing non-bank financial institution, thereby creating competition; Technology - Technology has opened up new options for product and delivery. At the same time changes in technology mean that the cost of wrong decisions as per

obsolete systems as well as inflexibility in operation; Growing customer sophistication – undermined many of traditional assumptions about stable relationships and profitability that banks have come to expect.

But the creation and proper use of this system is not possible only by the selection and the use of required level of tangible factors of the organization without the creation and maintenance of positive environment or an appropriate mindset where all the people are happily, comfortably and spontaneously move forward for the development of organization. Such a situation demands a conducive climate, where employees can fearlessly; happily and freely engage them to apply different ideas, concepts for organizational development. The inertia that may exist in organizational climate may be propelled with the innovative work behaviour. Unless the employees are open to creativity that can seriously limit an organization's ability to adapt and change. Therefore it is necessary to identify the climatic factors which may facilitate the innovative work behaviour for the enhancement of Indian banking system.

Conceptual Framework of Organizational Climate:

James (1982) and James et al. (1988) conceptualized organizational climate as an aggregated psychological climate. It refers to the "set of perceptions that reflect how work environments, including organizational attributes, are cognitively appraised and represented in terms of their meaning to and significance for individuals' (James et al, 1988). They argue that if people in an organization share similar perceptions of a psychological climate dimension, it is legitimate to aggregate these individual perceptions into an indicator of organizational climate. Glick (1985, 1988), Schneider (1985), and Schneider and Reichers (1983) conceptualized organizational climate in terms of other constructs such as interpersonal practices, inter-subjectively developed meanings, policies and practices, and not as a mere aggregation of psychological climate. Litwin and Stringer, (1968) has given a macro perspective of analyzing the organization. According to them, "Climate can be defined as the perceived attributes of an organization and its sub-systems as reflected in the way an organization deals with its members, groups and issues." The emphasis is on perceived attributes and the working of sub-systems. This frame work emphasizes on motivational linkages and seems to be quite relevant for studying organizational climate. A brief model of Litwin and Stringer (1968) considers six motives relevant for organizational climate. These are – Achievement, Influence, Control, Extension, Dependency, and Affiliation.

James et al. (1988) observed organizational climate as sum of members' perceptions about the organization's work environment. Generally, these perceptions are descriptively based rather than value based (Payne et al. 1976). It is more than simply a summary of employees' likes and dislikes (Altman, 2002). In the same line of thought, James and Jones (1976) conceptualized climate as a set of perceptually based descriptions of relevant organizational features, events and processes. The climate within the organization may be described as: i) perceptual ii) abstract ii) descriptive v) not evaluative vi) not actions (Joyce and Slocum, 1979). At the individual level, these perceptions represent cognitive interpretations of organizational context or situation. These mediate the relationship context and individual response providing a basis for behaviour and effect (Schneider, 1983). Glick (1985, 1988) has repeatedly argued for the conceptualization of organizational climate as an organizational rather than individual attribute resulting from sociological and organizational processes. He defined organizational climate as "a broad class of organizational, rather than psychological variable that describes the organizational context for individual actions" (Glick, 1985). Such organizational variables mainly refer to formal and informal interpersonal practices (Schneider, 1985) and inter subjectively developed meanings resulting from organizational sense-making process (Glick, 1985). Organizational climate describes how organization operationalizes the routines and the behaviours that are supported and expected. It refers to what happens in the organization and describes the structure of relations in the organization (Kandemir et al. 2002)

For Litwin and Stringer (1968), Frederiksen et al. (1972), and Schneider and Bartlett (1968, 1970), the inclusion of individual-difference variables with the organizational climate construct represented a somewhat futile early attempt to cross levels of analysis in the prediction and understanding of individual behavior. It is fair to say that this early work proceeded under the assumption that climate serves as a moderator of individual differences–individual performance relationships.

Schneider and Barlett (1970, 1968) viewed organizational climate as perceptual as well as an individual attribute.

Climate in this approach is viewed as summary or global perception held by individuals about their organizational environment. Some of them are encompassed by the work environment scale developed by Moos in 1994. It includes various broad dimensions like Involvement, co-worker, cohesion, supervisor support, autonomy, task orientation, work pressure, clarity, managerial control, innovation, physical comfort and others.

Actually climate research is grounded in the Gestalt psychology of Kurt Lewin. It is a gestalt that is based on perceived patterns in the specific experiences and behaviors of people in organizations. That is, when experiences and behaviors are perceived to be patterned in particular ways, the gestalt that the pattern connotes in the abstract constitutes the climate of the situation. In other words, the sense people make of the patterns of experiences and behaviors they have, or other parties to the situation have, constitutes the climate of the situation (Schneider et al, 2000).

The organizational climate has a profound influence on outlook, well being and attitudes of organizational members and thus, on the total performance. It provides a useful platform for understanding such characteristics of organizations, as stability, creativity and innovation, communication and effectiveness etc (Kumar, 2000).

Initially, researchers commented that the concept of climate was of little value because of its redundancy with job satisfaction (Guion, 1973; Johannesson, 1973). Subsequent research has since substantiated a distinction between these two constructs, defining climate perceptions as employees' descriptions of their work environment, whereas job satisfaction refers to employees' evaluations of those perceptions (James and Jones, 1974; LaFollette and Sims, 1975; Payne, Fineman, and Wall, 1976; Schneider and Snyder, 1975).

Organizational climate may have either a subjective or objective focus (Parker, Baltes, Young, Huff, Altmann, Lacost and Roberts 2003). From a subjective perspective organizational climate is an aggregated molar construct, reflecting the sense-making processes (Weick, 1995) by which group members' collectively understand and share their experiences of organizational events for organizational learning. Such interpretations are properties of a social collective in that they are inextricably linked to employee interaction processes (Ashforth, 1985; Rentsch, 1990; Schneider and Reichers, 1983; Young and Parker, 1999). From an objective perspective, organizational climate is a property of the organization itself and represents employees' descriptions of an area of strategic focus or organizational functioning such as customer service (Schneider and Bowen, 1985; Schneider, Wheeler and Cox, 1992; Schneider, White and Paul, 1998), innovation (Abbey and Dickson, 1983), transfer of training (Tracey, Tannenbaum and Kavanaugh, 1995), or safety (Zohar, 2000).

Organizational climate, an important characteristic of organizational culture, reflects an overall feeling, conveyed by the physical set up, the way participants interact, and the way the people of the organization conduct themselves with customers or outsiders (Luthans, 1995). Climate factors may determine certain outcomes and can be manipulated to facilitate transforming organization (Field and Abelson, 1982).

Schein (1996) argues that in almost every organization there are three important cultures that have a major impact on the organization's capability to innovate. These are the operator culture, the engineering culture and executive culture. The operator culture is essentially an internal culture but the engineering and executive cultures have their roots outside the organization in wider occupational communities. Operations managers value people as human assets. They tend to be very sensitive to the interdependencies between the separate elements of the production process and recognize that, regardless of how carefully engineered a process is, its effective functioning will be determined by the quality of human interaction. Openness, mutual trust, commitment, and the ability of people to learn and adapt to unanticipated circumstances are highly valued. Khandwalla (1989) also has described organizational climate as the workers' feeling about the workplace and its norms in practice, which govern their feelings.

Conceptual Framework of Innovative Work Behaviour:

Psychological definitions of creativity generally contain two separate components: we make or think something new, or a new combination of existing elements. This is the element of novelty or innovation. But to be creative, the idea must also be useful or valuable i.e. 'fitness for purpose.'

Boden (1994), distinguishes between these two levels of innovation as 'P-creativity' – that which is new to the

individual – and 'H-creativity' – that which is new to the world. For an idea to be innovative in business or in art, it must deviate from the historically established norms and conventions, not just from our personal history (Bilton, 2007). So Boden's H-creativity is the prerequisite for the competitive advantage of the organization. But the idea or innovation must be tested against its external context. So the next stage or criterion in the creative process is that our idea has value or meaning in respect to utility, intention and time, and the last, but not the least, that acceptance of the innovative ideas by the organization, ie proper organizational climate.

Obstacles which inhibit creativity are, negativity in individuals and in teams, fear of failure, lack of quality thinking time and experience to draw from, over-conformance with rules and regulations, a lack of freedom to develop, making assumptions that are not necessarily true, applying too much logic and not listening to the depth of mind, thinking that I am not creative (Thomas 2005). Bunce and West (1989) and West (1989) suggested that innovative work behaviour serves as a problem focused coping strategy used by workers to cope with intensified task requirement (Burke and Belcourt, 1974; Lazarus, 1996; Parasuraman and Hansen, 1987) .

So, in an organization a team demands a balanced composition of adapters and innovators (Kirton, 1984).The scope of innovation in organization ranges from the development and implementation of new ideas that have an impact on theories, practices or products across the whole organization (Axtell et al 2000). According to Chesbrough (2006), moving ideas in and out of the company can motivate the company to get its ideas faster to market, either inside your own business or outside through the business of others. Faster to market means faster feedback from the market and hence faster learning within the organization. Besides products variety, customers are demanding better value. It doesn't mean low prices; effective possible way is innovation (Meyer and Garg, 2005).

China in manufacturing and India in service sector and R&D has already established their leading innovative role (The Economist, 2004). The human resource development has considered as an important criterion for development in India therefore with the background of innovativeness Indian organizations try to modify organizational climate where people will probably practice innovative work behaviour comfortably. Implementation of innovative process is extremely valid in case of banking system, where apart from price / profit competition, customers give importance to the process of dealing, time duration for completion of job, user friendly communication system etc.

Objectives of Study:

Realizing the significance and consequences of the role of Organizational climate on employee innovative work behaviour, in the management of change and organizational development for a banking system one can identify three key linkages:

1. The concept of an organizational climate is increasingly relevant as banking system seek to deal with complex environments.
2. It is a natural evolution as banking system evolves new behaviours and structures.
3. It harnesses the belief that humans are innovative in nature if they get appropriate climate.

Keeping in mind the present researcher was interested to study the role of organizational climate to unlash innovative work behaviour in the marketing operation of the Indian banks, and has reviewed the relevant scientific literature in this context which has been presented in the following section.

Survey of Literature:

Organizational Climate:

Kirby et al. (2003) are reported concerning employees' approaches to work and their perceptions of the workplace environment where good supervision, choice-independence, are positively associated and workload is negatively correlated. Parker et al. (2003) using meta-analytic procedures found that psychological climate, operationalized as individuals' perceptions of their work environment, does have significant relationships with individuals' work attitudes, motivation, and performance. But, psychological climate is little more than an umbrella term for various work environment perceptions and that to understand their effects there is need to more specific theory related to job characteristics, leadership, etc. Murillo et al (2002) identified that without change of organizational climate management have not been able to capture knowledge from customers. Moxnes et al. (1991), in determining influence of three management training

programs for the supervisors upon organizational climate identified that the most process oriented training programme did change the organizational climate, as perceived by the supervisors, but paradoxically in an apparently negative direction, especially as far as interpersonal conflicts and supervisorial skills were concerned. Aston studies (Payne and Pugh, 1976) with various types of industries attempted to establish the relationship between organizational structure and organizational climate. This research proceeded under the seemingly reasonable assumption that the structure of the organization (hierarchy, size, span of control, and so forth) yields the gestalt that is climate.

Lewin et al. (1939) used the terms social climate. They were interested in the consequences of leader behaviour on the behaviour displayed, in turn, by the boys in the groups. Their study with more than 15 groups indicated that perhaps most crucial for the future of the climate construct is the second point above: Climate is an abstraction defined by a set of behaviors and attitudes but existing as an abstraction of those behaviors and attitudes. Climate research indicate that climate varies with the context like climate for organization, climate for academic institution etc. at the same time it also means all the thoughts are related to the development of positive or conducive climate (Murillo et al 2002). Apart from that perception of climate varies with supervisor (Moxnes et al. 1991), Schneider's (1975) review of the literature on organizational climate concluded with the thought that the generic concept of organizational climate is so amorphous and inclusive that the results from the measurement of climate are conceptually amorphous. To Schneider it seemed that the measures had become so multifaceted that they no longer focused on Theory X or Theory Y managerial climate (McGregor, 1960), or on the inclination for banks to hire "right types" (Argyris, 1957), or on the fit of needs to campus characteristics (Stern, 1970), or on any specific kind of climate. He proposed the idea that climate has to have a focus, a target—that climate research has to be a climate *for* something. The *something* of interest might involve issues as diverse as the climate for safety (Zohar,1980), the climate for sexual harassment (Fitzgerald, Drasgow, Hulin, Gelfand, & Magley, 1997), the climate for well-being (Burke, Borucki, and Hurley, 1992).

Srivastava (2005), in studying post merger integration for service industry has identified 10 typical elements that contribute to a favourable climate for an organizational development. Those are: quality of leadership, amount of trust, communication- upward and downward, feeling of useful work, responsibility, fair rewards, responsible job pressures, opportunity, reasonable controls, structures and bureaucracy, employee involvement and participation. Campbell et al. (1970), in their study with service industry found four dimensions of organizational climate: individual autonomy, degree of structure imposed on the position, reward orientation and consideration of warmth and support. Agau, et al. (1968) considered eight components of climate including structure, reward, standards, identity, conflict, warmth, responsibility and participation in his questionnaire. Later, Schnake (1983) included only five components namely, warmth and support, structure, reward and participation, responsibility and standards. A large number of scale have been developed to asses the various aspects of academic and school organizational climate (Owens, 1991; Rentoul and Fraser, 1983), but unfortunately these scales were restricted to assessment of social interaction between teachers and principal, and does not enable a broader view to be taken when assessing organizational behaviour, and human resource management in academic institution.

Innovative Work Behaviour:

Meyer and Garg (2005), with the help of secondary research on the industries of Asian country, opined that the only effective response to the pressures of supply and demand, is to innovate which will become an important precondition in Indian situation. Greenhalgh et al. (2004), found that the successful implementing and maintaining innovations in service organizations depends on pragmatic rather than an academic perspective where process information was systematically documented. Farmer, et al. (2003) showed that among the employees creativity was highest when a strong creative role identity was paired with perceptions that the employing organization valued creative work. It showed that articulation of creativity in an organization depends on some different natures of organizational climate. Janssen (2003), established that a worker's innovative behaviour interacts with job involvement in providing conflict with co-workers who want to prevent innovative change in safeguarding the existing paradigm or who want to avoid the uncertainty and insecurity surrounding change. Villiers (2002), identified that the frustrations of this time were

necessary to develop the creativity needed for significant change. Antonelli, (2000) showed that a large share of innovation activity derives from knowledge exchange and learning among firms. In firms, the capability of generating innovations is based on a continuous effort to absorb external knowledge and to contaminate it with internal knowledge, and to capitalize on the opportunities of learning from all open communicative channels. Fichman and Kemerer (1997), proposed that organizations will innovate in the presence of knowledge barriers when the burden of organizational learning is effectively lower, either because much of the required know-how already exists within the organization, or because such knowledge can be acquired more easily or more economically. Only a small part of innovations is derived directly from R and D activity, as is assumed by standard economics (Edquist, 1997; Lissoni and Metcalfe, 1994). Scott and Bruce, (1994), in a hypothetical model, viewed individual innovative behaviour in the learning organization as the outcomes of four interacting systems – individual, leader, work group and climate for innovation. Baba (1989), attempted to explain why some industries succeed in maturation by formulating the generation and utilization of new technologies into a continuous process, has seen that in the industrial climate the firms' inclinations towards offensive management and product-cum-process innovation has resulted in the coupling of continuous innovation and industrial evolution. Fricke (1983), undertook a project on workers working in unskilled condition and under extreme stress where they were willing, interested and participate in changing their working condition. He found that innovatory qualifications are often unrealized because of the maintenance of hierarchical organization structure in decision making and planning. Jones et al (1971), argued that cognitive representation and report of innovative work behaviour of employees are more subtle because employees have much more information about the historical, contextual, intentional and other background of work activities.

Zammuto, et al. (2000), in the conclusion of their study on Managerial Ideologies, Organization Culture, and the Outcomes of Innovation, draw attention to three points: First, managers in control-oriented organizations should think twice before adopting the "latest" management tools. Failed implementation efforts are expensive in terms of time and financial costs as well as the personal toll they take on the individuals involved. Second, managerial and technological innovations promising cultural transformation should be viewed skeptically. Such innovations can change organizations' cultures, but, as often as not, changes may be in the opposite of the hoped-for direction. Third, even though organizations' cultures contain many idiosyncratic elements, their underlying ideologies share a common basis in the managerial ideologies embedded in the larger social system.

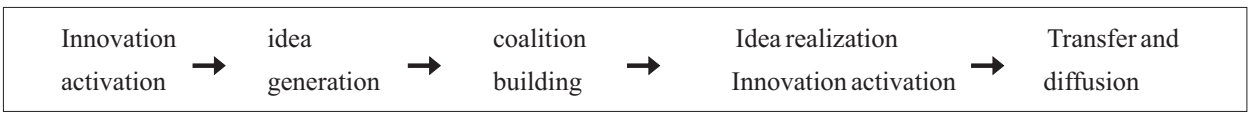
Michela and Burke (2000), propounded that support for innovation is basically a shared value that innovation is good. These expectations and values may be instilled explicitly in socialization or implicitly in cultural messages. In addition, although it does not directly influence innovation, a climate for excellence often is helpful because people striving for excellence will naturally seek innovation when appropriate. Similarly, a clear, attainable, and consensually shared vision or mission is helpful because people become motivated to reach the goal by appropriate means. Moreover, specific configurations of culture and climate factors were observed to coincide with particular levels of innovative or creative output. It has been seen that firm's most innovative division displayed relatively high conflict and low trust and harmony, although risk taking and debate were encouraged, as was playfulness.

Foray and Freeman (1993), in their study found that the right climate for innovation is:

1. Management Commitment: recognition and commitment to encourage innovation and facilitate an attitude.
2. Positive mind set for strategic change: Development and test of more than one solution to problems encountered
3. Bearing in mind a long term perspective: There is a need to test alternative courses of innovative action before implementation. So it demands time and long term process.
4. Flexibility and openness to deal with change: Capable of responding to changing situations, barriers between staff and executives are minimized, flat structure, decision making is pushed downwards; entrepreneurial flair present at all levels.

5. Accepting the possibility of risk and failure: Unless failure results from negligence, recklessness or complete incompetence, managers should not seek out scapegoats or exact revenge.
6. Encouraging Teamwork and Innovation: Climate is open, participation is encouraged, facts and information are readily available, change is managed positively, and resources are provided for training and development, rules are at a minimum, internal communications are good and more by mouth than memo, respect is given to all colleagues, teamwork often transcends departmental boundaries.
7. Competencies and learning capabilities: Must have background or prerequisite knowledge for the new learning or understanding the learning of others that in long run exhibit innovation.

Kanter (1988), had indicated some steps for organizational creativity:



Janssen (2000), based on theoretical assumption of Kanter (1988) and Scott and Bruce (1994),developed the scale (consisting of idea generation, idea promotion and idea realization) and was rated innovative work behaviour in the work place of 170 non management employees from a Dutch industrial organization and among a sample of teachers from a secondary school in the Netherlands. Analysis indicated two facts:

1. Inter correlation between three components of innovative behaviour were high, and viewed as combining additively to create an overall scale of innovative work behaviour.
2. There exists a positive correlation between job demands and innovative work behaviour when employees perceived effort-reward fairness rather than under-reward unfairness.

Workers' innovative ideas for change in organization are likely to challenge the established framework of task relationship, informal norms and expectations that co workers have on one another. As such, innovative change implies that new sets of task, role relationship and informal norms have to be developed or adopted to the needs of the new situation (Jones, 2001). Co workers may tend to resists those changes because of the insecurity, uncertainty and stress they may bring (Argyris, 1957; Jones, 2001; Lewin, 1951;

Marketing Operation of Indian Banks:

Marketing operation in banks are most effective when it is an integral component of overall organizational strategy, to successfully engage customers, prediction, and competitors in the market, matching with the climate specifically on corporate strategies, corporate missions, and corporate goals. Banks are trying to innovate the number of marketing strategy and adopting these depending on the climate. In this context few surveys can be highlighted. Mehta (2010) reported that there is need to develop Marketing Communication in Indian Banks. He found that banking business can improve considerably on adoption of personal selling as a strategy. Where the public sector banks do not adopt the strategies of promotion as personal selling and direct marketing; on the other hand the same are adopted by private sector banks (Gupta, and Mittal, 2008). Mohanrani and Mahavi (2007) identified that teenagers are influenced by updated information of the product of the bank. Logical teenagers give importance to sales promotion factors like offers and schemes, while emotional teenagers gives importance to aesthetic appearance, colour, brand value, popularity and social image on selecting the products. Sofat, and Hiro., (2007) conducted a comparative study on Creativity and Innovations in retail banking. Results suggests that now challenge for banking sector in the current scenario is to design and innovate the financial product which are convenient to use and continuously meet financial goals of the customers. Dixit, (2004) concludes that for successful marketing and to make it more effective, identification of the customer needs by way of designing new products to suit the customers. The staff should be well equipped with adequate knowledge to fulfil the customer's needs. Long-term strategies should be adopted to convert the entire organization into a customer-oriented one. Harish Kumar (2004) found that the private banks, specially the foreign ones have been giving the nationalized banks a run for their money by launching various innovative banking

products which were hitherto unheard in Indian economy at least. Entry and / or expansion of such foreign banks as City Bank, American Bank, Standard Chartered Bank, HSBC Bank Etc. have all along been leading the way both in terms of innovative approach to tap potential customer base and introduction of imaginative products and services in the Indian market. Lastly, it is worth to mention the comment made by Jain, A. (2007), that marketer has to know that every marketing environment differs from place to place as well as nation to nation than that of the same country state . So the banking business transactions have to be sound planned and objectives oriented in nature.

Methodology

Variables

1. Dimensions of Organizational Climate: Organizational climate is employees perception of relevant components namely, appraisal and recognition, functional coordination, effective discipline policy, participative decision making, professional growth, professional interaction, role clarity, customer orientation, supportive leadership style, and security and stability (Field and Abelson, 1982; Glick, 1985, 1988; James et al. 1988; James and Jones, 1976; Litwin and Stringer, 1968; Luthans, 1995; Payne, et al., 1976; Schneider, 1983). In this study, it was a cognitive interpretation of the bank officers about organizational climate of the bank (James et al., 1988).

2. Dimensions of Innovative Work Behaviour: Innovative work behaviour of the bank employees was defined as the self reported level of three different behavioural tasks: idea generation, idea promotion, and idea realization. These job related components were recognized as important personal level factors related to innovation in the workplace (Amabile et al., 1996; Kanter, 1988; Scott and Bruce, 1994; Woodman et al., 1993).Here idea generation was considered as those variables which were related in the pattern of activities by the employees for novel and useful ideas, critical thinking, searching for new methods and techniques etc in the bank. The idea promotion of the study was concerned only those variables which were related to the social activities of the officer for acquiring approval, awareness and support for innovation. Idea realization has considered the nature of participation and application of innovative ideas by the bank officers. These three factors were considered to combine additively as the measures of innovative work behaviour.

3. Public and Private Sector Banks: For this study among the public sector banks viz. altogether, 23 branch offices including regional offices of The State Bank of India (SBI), United Bank of India (UBI), The Industrial Development Bank of India (IDBI) and Oriental Bank of Commerce (OBC) were considered. Among the private sector banks, 28 branch offices including regional offices of ICICI Bank and AXIS Bank Ltd were considered.

Tools Used:

1. General Information Schedule: Altogether the schedule had 7 items furnishing information about personal demographic (age, sex, qualification) and job demographic (designation, types of job, span of services and types of bank)

2. The Organizational Climate Scale (adopted): On the basis of previous researches (Ambile, 1998; Argyris 1958; Frese, et al. 1996; James et al., 1992, Litwin and Stringer, 1968; Nystrom, 1990) Organizational Climate Scale, was developed by Gupta and Ray (2005) was adopted for the study.

3. Innovative Work Behaviour Scale (Developed):

Considering the concept of Janseen (2000) nine items measuring device for individual innovative work behaviour in the work place, an attempt had been made by the present investigator to develop the said measures for banking situation.

Item Validity:

For item analysis of the preliminary selected distribution of items of the scales the Internal Criterion Method was followed to select both suitable components and related items that correlate the most with total scores. Considering the correlation values (values above 0.40) the relevant 20 items and 10 components of Organizational Climate Scale (range of r 0.42 – 0.95) and 18 items and 3 components of Innovative Work Behaviour Scale (range of r 0.46-0.95) were retained for the final scales. These indicated that the total items of each of the scales along with their respective subscales for individual enquiry areas had good amount of content validity.

In order to identify the nature of the Construct Validity of the scales, the inter – enquiry areas correlation for the two scales were calculated. The results (Organizational Climate Scale: range of r= 0.60 – 0.93 and Innovative Work Behaviour Scale: range of r= 0.47-0.87) indicated that in each of the two scales any change of values or loading in individual enquiry

areas will affect the respective scales which was an indication of the trends of unidimensionality of the set of domains for each of the scales. Positive and significant correlations, affirmed that the two scales had subsequently sound in factorial validity.

Estimation of Reliability:

The computed coefficients of correlation for Organizational Climate Scale (Split half=0.97, Cronbach's Alpha=0.97 and Spearman Brown=).97) and for Innovatine Work Behaviour Scale (Split half=0.76, Cronbach's Alpha=0.81 and Spearman Brown=0.85) were found highly significant – relative of high reliability of the two scales.

Norms

The norm of two scales with the adopted items were found out and had been presented in Table I

Table I: Mean, Standard Deviation and Norm Range of the Scales

Scales	Mean (M) (N=100)	Standard Deviation (SD)	Norm Range
Organizational Climate Scale	70.80	15.76	33 – 86
Innovative Work Behaviour Scale	57.52	14.38	40 – 88

Sample

With the help of Regional Centers of Banks, Training Institute of Banks, and other agencies, personal contact and external auditors of the banks the list of names of bank officers (along with their office telephone number and personal mobile numbers) were selected from Eastern Region of India. A total of 460 bank officers (240 from nationalised and 220 from private sector banks) with equiproportionate number of junior and senior cadre, were selected randomly, by matching and controlling of sample characters (age, sex, qualifications, years of service, experience, technical training attendance etc).

Based upon this preliminary selected sample (N=460) respective group of officers, were approached, and purpose of the study was explained to them to collect data without affecting normal work schedule of the banks. On the basis of the willingness to act as a respondent in investigation a pool of 360 interested bank officers were selected and they were checked against the following inclusion and exclusion criteria.

1. Inclusion Criteria: Age range between 25 to 60 years, Experience as bank officer at present bank is not less than 2 years, Resident of Eastern Region of India.

2. Exclusion criteria: Record of any dispute with bank, History of any gap in service other than maternity or medical service, History of any chronic physical disorder, Records of any undisciplined behaviour, History of change of service in different organization other than bank.

Through a careful checking to verify the research assumption finally 300 bank officers were selected (on the basis of little background information) from the said banks for collection of data. From the above matched stratified sample 100 bank officers (50 from public sector and 50 from private sector) were utilized for construction and adaptation of test and 200 samples (100 from each sectors including equiproportionate rate of junior and senior grades) were used for collection of data.

Procedure:

Responses were treated statistically to determine mean, SD, as well as subjected "t" test for identification of significant differences of variables for low perceived and high perceived organizational climate. Correlation between organizational climate score and innovative work behaviour was done and multiple regression was conducted with significant items to dentify the faciliting factors for the development of learning organization.

Results

To study the organizational climate along with its components and innovative work behaviour along with its components as perceived by the bank officers of nationalized and private sector banks scores were collected through responses of bank officers (N=200) of nationalized and private sector banks and were treated to yield statistical measures of central tendency (table IX and table X)

Table 9: Mean and Median of Organizational Climate of Indian Banks as Perceived by Bank Offices of Indian Bank (N=200)

		Appraisal & recognition	Functional Coordination	Effective discipline Policy	Participative Decision Making	Professional Growth	Professional Interaction	Role Clarity	Customer Orientation	Supportive Leadership Style	Security and Stability
Mean	35.96	3.67	3.55	3.47	3.26	3.45	3.92	3.80	3.80	3.51	3.58
Median	39.75	4.00	3.50	4.00	3.00	4.00	4.50	4.00	4.00	4.00	3.50
Minimum	16.50	1.00	2.00	1.00	1.00	1.0	1.50	1.00	1.50	1.00	2.00
Maximum	46.00	5.00	5.00	5.00	4.50	5.0	5.00	5.00	5.00	5.00	4.50

Observation: It can be said that organizational climate and all its components as perceived by the bank officers of Indian nationalised and private sector banks are inclined towards favourable in nature. But it is not absolutely accepted by all the employees.

Table 10: Mean and Median of Innovative Work Behaviour of Indian Banks as Perceived by Bank Offices of Indian Bank (N=200)

	Idea Generation	Idea Promotion	Idea Realization	Innovative Work behaviour
Mean	3.05	3.25	3.17	9.48
Median	2.83	3.00	2.83	8.67
Minimum	1.67	1.00	1.17	5.67
Maximum	5.00	5.67	5.50	15.00

Observation: It can be said that innovative work behaviour and its components as perceived by the bank officers of Indian nationalised and private sector banks are tending in the direction of average in nature. Organization must provide more opportunity to develop the same.

To study the effect of organizational climate on innovative work behaviour as perceived by the bank officers of nationalized and private sector banks two groups (high and low scores' group) of organizational climate were formed on the basis of median values of organizational innovative work behaviour score (8.67). t-test were conducted between two group (high and low) with organization climate score (table XI)

Table XI: Identification of Significant Difference of Perceived Organizational Climate due to Variation of Perception of Innovative Work Behaviour (High and low) as Perceived by Bank Offices of Indian Bank (N=200)

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Climate	33.34	.00	**2.10**	198	.04	1.99	.95	.12	3.86
Appraisal & recognition	27.72	.00	**2.03**	198	.04	.22	.11	.005	.44
Functional Coordination	22.59	.00	**2.41**	198	.02	.22	.09	.04	.40
Effective discipline Policy	25.60	.00	**2.61**	198	.01	.32	.12	.08	.56
Participative Decision Making	3.92	.05	1.51	198	.13	.17	.11	-.05	.39
Professional Growth	4.64	.04	.82	198	.41	.09	.12	-.14	.33
Professional Interaction	12.97	.00	.093	198	.93	.01	.13	-.24	.26
Role Clarity	2.06	.13	1.02	198	.31	.14	.14	-.13	.42
Customer Orientation	.000	.99	1.86	198	.06	.24	.13	-.014	.49
Supportive Leadership Style	36.30	.00	**3.56**	198	.00	.41	.12	.18	.63
Security and Stability	4.40	.04	1.71	198	.09	.16	.10	-.03	.35

Observation: There is significant differences of the perception of organizational climate for variation of innovative work behaviour (high and low). It has also seen that there are significant differences for the perception of the components of organizational climate viz, Appraisal and recognition, Functional Coordination, Effective discipline Policy and Supportive Leadership Style. Values of t-test also indicate the positive impact of high perceived group on their perception of organizational climate. So, to encourage innovative work behaviour of the present employees or to recruit new employees the banking system must maintain their level of healthy and positive image of quality of feedback and appreciation on work performance, intra and interdepartmental contact and support the bank for interdepartmental functions, level of positive and health image of the officers about the rules and regulation relating to discipline in the bank and the level of interaction, communication etc. among officers and higher management.

Further to study whether there exists any association between organizational climate and innovative work behaviour as perceived by the bank officers of nationalized and private sector banks correlation analysis was done (table XII).

Table XII: Correlation Between Scores of Organizational Climate and its components with Innovative Work Behaviour and its components as Perceived by Bank Offices of Indian Bank (N=200)

	Climate	Appraisal & recognition	Functional Coordination	Effective discipline Policy	Participative Decision Making	Professional Growth	Professional Interaction	Role Clarity	Customer Orientation	Supportive Leadership Style	Security and Stability
Innovative Work behaviour	.26**	.32**	.27**	.22**	.11	.22**	.13	.17*	.16*	**.40****	.22**
Idea Generation	**.40****	**.40****	.19**	.20**	.26**	.30**	.27**	.28**	**.40****	**.40****	.30**
Idea Promotion	.21**	.27**	.23**	.24**	.09	.16*	.09	.10	.09	.27**	.23**
Idea Realization	.10	.17*	.27**	.13	-.06	.11	-.03	.06	-.04	.22**	.04

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Observation: Results indicate overall innovative work behaviour is positively correlated with supportive leadership style. It can be said that in the banking system when leadership process support, encourage and provide opportunity for innovation then employee can utilise their innovative capacity.

It has also been observed that in banking system idea generation of innovative work behaviour is only positively associated with overall organizational climate, proper appraisal and recognition on receiving of positive feedback from the bank management, their orientation with customer and support of leadership. It can be inferred that supportive leadership, proper appraisal and recognition and warm relationship with customers in bank help the officers to think positively for innovative idea generation. But they are not getting any opportunity to promote or realize these innovative ideas. Probably this situation arises as the bank management systems are totally controlled and guided by some of the guideline of RBI so there is no such scope in general.

To study the cause and effect relationship among associated variables of organizational climate and innovative work behaviour as perceived by the bank officers of nationalized and private sector banks stepwise regression analysis was done (table XIII and table IV).

Table 12: Stepwise Regression Analysis Between the Component of Supportive Leadership Styles of Organizational Climate and Overall Innovative Work Behaviour as Perceived by Bank Offices of Indian Bank (N=200)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.350[a]	.122	.118	2.21

a:Innovative Work Behaviou: . Predictors: (Constant), Supportive Leadership Style

Observation: Supportive leadership style of organizational climate have only 11.8% positive effect for innovative work behaviour.

Table XII: Stepwise Regression Analysis Between the Components Appraisal and Recognition, Customer orientation and Supportive Leadership Styles, of Organizational Climate and Components Idea Generation of Innovative Work Behaviour as Perceived by Bank Offices of Indian Bank (N=200)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.401[a]	.161	.157	.820
2	.429[b]	.184	.176	.810

a. Idea Generation: Predictors: (Constant), Avg Supportive Leadership Style

b. Predictors: (Constant), Avg Supportive Leadership Style, Avg Customer Orientation

Observation: Supportive leadership style of organizational climate has 15.7% positive effect and customer orientation has 2.1% positive effect on idea generation for innovative work behaviour, where as appraisal and recognition has no effect on it.

Conclusion and Recommendation

The intention of the study was to see whether organizational climate has any impact for the development of innovative work behaviour in Indian bank. Study shows that though, neither organizational climate is highly conducive nor the innovative work behaviour is appreciating but positive climate has significant effect on the development of innovative work behaviour. Study also indicates the requirement of leadership support and customer oriented system are to be improved. This study also highlights the need for searching other factors related banking system which may help in innovation.

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Consumer Buying Behaviour: Impact of Package Design

Preeti Mehra and Raghbir Singh

Abstract

This study validates a comprehensive approach to explain the consumer attitude towards packaging in general. It also examines the level of attentiveness paid to the pack design of displayed products. In order to attain these objectives a sample of 500 respondents belonging to three cities of Punjab; Jalandhar, Amritsar and Ludhiana and Union territory of Chandigarh was drawn. Non-probability convenient sampling was adopted for selecting the respondents. It was also found that consumers do not pay much attention to an attractive package unless it highlights a promotional offer or mentions the word 'improved.'

Keywords: *FMCGs, Packaging attributes bio-degradability.*

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A new methodology, "moment of truth innovation," emphasizes the significance of pack design and packaging in the process of consumer decision-making. Conferring to this approach, after having recognized an inadequate need, the process of innovation needs to be created from where the first moment of truth happens, when the consumer observes the product on the shelf. For brands of FMCG companies, survival of the strongest occurs on the shelf of the supermarket itself, so it is essential that innovations in packaging be taken at the first step (Mardsen, 2012).

Packaging enables competent handling and storage of a product during the course of making it reachable to the customer. As one of the most indispensable function of marketing, it also acts as a means of vital usage details, and content information to the user.

Plastic packaging has a shortcoming due to its incapability to biodegrade and poses as a long-term environmental nuisance (www.sustainableliving.unilever.com). FMCG companies are working hard to resolve this issue. With an upsurge in the retail competition, FMCG companies have been incorporating a number of innovations in the packaging of its products.

Review of Literature

Several studies have been carried out to comprehend the influence of various elements of a package design on the perception of the consumer. Silayoi and Speece (2004) analysed the role of packaging in consumer purchase decision-making. They assumed that packaging was a critical factor because it was able to establish communication between the company and the consumer. They also pointed out that a good package enabled a consumer to perceive the quality of a product. They added that visual elements such as graphics, colour, size and shape of the package and informational elements such as information about the usage and contents of the commodity mentioned on the package helped a consumer in taking a purchase decision. Ampuero and Vila (2006) affirmed that the design of a package goes a long way in shaping consumer perceptions and assisting them in taking purchase decisions.

The preceding review of literature illustrates that packaging plays an important role in the marketing of a product. When one chooses among the available alternatives of a product one generally considers the attributes of a package. The question arises that the consumers pay more significance to the 'visual elements' or 'content elements' of a package? Whether a package is able to capture the attention of a customer only it is attractive or if it highlights a promotional offer? Is the recyclability and biodegrability of a package a critical concern for the consumer? These are some of the questions that need to be explored further and have been investigated in this study. Hence, in this regard, this study is meant to justify the requirements of marketers. Knowledge on all this can help marketers in package development, designing, modification and disposal strategies.

Objectives of the study

This paper explores attitude of respondents towards packaging in general. The attention paid to the pack design and attitude towards different aspects of packaging like usage instructions, colour schemes, content clarity, package quality, recyclability and reusability have also been reconnoitered.

The specific objectives of the study are:

1. To study the consumer attitude towards packaging in general and to examine the prominence paid to the visual and content elements of a package.
2. To study the level of attentiveness paid by the consumer towards the design of all displayed products.
3. To determine the attitude of respondents towards different aspects of a package.

4. Research methodology

The sample of the study was planned as 500 respondents belonging to three cities of Punjab: Amritsar and Ludhiana and Jalandhar and Union territory of Chandigarh. These cities were chosen to represent the three geographical regions of Punjab - Amritsar representing *Majha* region, Ludhiana representing *Malwa* and Jalandhar representing *Doaba* region. Capital city being more cosmopolitan was chosen. The sample was selected with the help of convenience sampling. However, efforts were made to include the respondents belonging to various demographic characteristics. Data were collected through a structured, pre-tested and non-disguised questionnaire.

For the present study income variable has been considered for analysis, as income seems to be important in determining consumers' preferences towards packaging. The four income categories considered for analysis are: I_1 (respondents having monthly income below Rs. 20000); I_2 (Respondents having monthly income between Rs. 20000 and Rs. 40000); I_3 (income between Rs. 40000 and Rs. 60000); and I_4 (income above Rs. 60000). The data have been analysed through Anova.

Analysis and Interpretation

1.1: Attitude towards Packaging

Consumers' purpose of purchase varies on the extent to which they accept that the product is capable of fulfilling their hopes (Kupiec and Revell, 2001). Expectations arise, when a brand is positioned proficiently. However, when the customer has no expectations, the plan to purchase is determined by what is communicated at the point of purchase. The pack design, colour, clarity and other linked attributes become critical factors in setting expectations.

In order to have an insight into the attitude of respondents towards packaging in general, five statements have been used. All the statements have been gauged on a five point scale (from strongly agree to strongly disagree) and the respondents were asked to express their level of agreement/disagreement towards the statements. To

determine the level of agreement/disagreement towards the statements relating to packaging as expressed by the respondents belonging to different income categories, the mean scores were computed by assigning weights 5, 4, 3, 2 and 1 to 'strongly agree', 'agree', 'neither agree nor disagree,' 'disagree' and 'strongly disagree' in that order. A higher score indicates greater agreement with a statement than the lower score.

To examine whether there is any significant difference amongst the respondents belonging to different income groups with respect to some aspects of packaging, the following null hypothesis has been tested.

H_O-1: There is no significant difference among the respondents belonging to different income groups regarding their preferences for various statements indicating different aspects of packaging.

In order to compare income-wise mean scores of the responses, F-ratios have been applied to the responses of each statement. Mean scores along with F-ratios for various statements depicting attitude of the respondents towards packaging is presented in Table 1.1.

Table 1.1
Attitude towards Packaging
(Income-wise Mean Scores and F-Ratio)

Sr.No.	Statements	Overall	I_1	I_2	I_3	I_4	F-Ratio
		Means	Means	Means	Means	Means	
S_1	I pay attention to the most attractively packaged product	3.84	3.89	3.8	3.96	3.69	1.96
S_2	I pay attention to the usage instructions mentioned on the package of a product	4.55	4.69	4.99	4.58	4.72	2.02
S_3	I usually stick to my favourite brand regardless of the attractiveness of an alternative brand's packaging	3.57	3.50	3.56	3.62	3.64	1.96
S_4	I switch over to another brand with attractive packaging	3.34	3.39	3.33	3.38	3.25	2.06
S_5	I pay attention to an alternative brand with attractive packaging if it mentions the word "improved" or is bigger in size	3.97	4.48	3.81	4.04	3.84	7.08
Total (N)		500	127	156	120	97	

The responses in Table 1.1 indicate that most of the respondents agreed with the statements 'I pay attention to the usage instructions mentioned on the package of a product' (MS=4.55) and 'I pay attention to an alternative brand with attractive packaging if it mentions the word "improved" or is bigger in size' (MS=3.97) as the mean scores are close to 4 or higher. Statements 'I pay attention to the most attractively packaged product', 'I usually stick to my favourite brand regardless to the attractiveness of an alternative brand's packaging' and 'I switch over to another brand with attractive packaging' have mean scores of 3.84, 3.57 and 3.34 thus, signifying that most of the respondents 'neither agree nor disagree' with these statements.

The responses have been further analyzed to determine the level of agreement among respondents belonging to

different income categories with respect to statements representing attitude towards packaging. The results in the table illustrate that irrespective of the income categories, respondents have shown their strong agreement for statement S_2-'I pay attention to the usage instructions mentioned on the pack design of a product' with mean scores higher than 4.5.

Respondents of lower income category I_1 have shown a strong agreement towards statement S_5-'I pay attention to an alternative brand with attractive packaging if it mentions the word "improved" or is bigger in size' (MS=4.48). They have agreed with statement S_1-'I pay attention to the most attractively packaged product' (MS=3.89) with mean score near to four. They are neutral to the statements S_3-'I usually stick to my favourite brand regardless of the attractiveness of an alternative brand's packaging' (MS=3.50) and S_4-'I switch over to another brand with attractive packaging' (MS=3.39) since the mean scores for these statements are close to 3.

Most of the respondents belonging to income category I_2 have displayed agreement with statements S_5-'I pay attention to an alternative brand with attractive packaging if it mentions the word "improved" or is bigger in size' (MS=3.81) and S_1-'I pay attention to the most attractively packaged product' (MS=3.80) as the mean scores are close to 4. Most of the respondents, however, seem to neither agree nor disagree with statements S_3-'I usually stick to my favourite brand regardless of the attractiveness of an alternative brand's packaging' (MS=3.56) and S_4-'I switch over to another brand with attractive packaging' (MS=3.33).

Most of the respondents of income category I_3 have agreed with statement S_5-'I pay attention to an alternative brand with attractive packaging if it mentions the word "improved" or is bigger in size' (MS=4.04) and S_1-'I pay attention to the most attractively packaged product' (MS=3.96). However, they seem to neither agree nor disagree with the statements S_3-'I usually stick to my favourite brand regardless of the attractiveness of an alternative brand's packaging' (MS=3.62) and S_4-'I switch over to another brand with attractive packaging' (MS=3.38).

Respondents of income category I_4 have agreed with statements S_5-'I pay attention to an alternative brand with attractive packaging if it mentions the word "improved" or is bigger in size' (MS=3.84), S_1-'I pay attention to the most attractively packaged product' (MS=3.69) and S_3-'I usually stick to my favourite brand regardless of the attractiveness of an alternative brand's packaging' (MS=3.64). They, however, are neutral towards statement S_4-'I switch over to another brand with attractive packaging' (MS=3.25) and seem to neither agree nor disagree with it.

The F-values obtained in the table confirm that the respondents belonging to different income categories are completely unanimous in their attitude towards packaging, as no significant differences have been found among the different income categories with respect to different statements representing attitude regarding packaging. Hence, the null hypothesis is accepted.

Summing up, it has been seen that all the statements have got almost the same mean scores among respondents of different income categories. Though, most of the respondents irrespective of their income have strongly agreed to the statement 'I pay attention to the usage instructions mentioned on the pack design of a product'.

1.2: Attention Paid to Pack Design during Purchase

To examine whether there is any significant difference amongst the respondents belonging to different income groups with respect to attention paid to some characteristics of package design, an attempt was paid to the tenability of the subsequent null hypothesis.

H_O-2: There is no significant difference among the respondents belonging to different income groups with respect to the attention paid to some characteristics of the pack design

The respondents were asked that while purchasing a product, do they tend to stop in between and pay attention to the package designs of all the displayed products. The overall as well as income-wise responses of the respondents have been explained in Table 1.2.

Table 1.2
Attention Paid to Some Characteristics of the Pack Design
(Income-wise Frequency Distribution of Respondents)

Sr.No	Statements	Overall	I_1	I_2	I_3	I_4
1	I always pay attention to the pack attractiveness of all the products	65 (13.0)	19 (15.0)	24 (15.4)	12 (10.0)	10 (10.3)
2	I pay attention only to find out if any product has some special offer	241 (48.2)	63 (49.6)	62 (39.7)	66 (55.0)	50 (51.5)
3	I pay attention only to the brand I purchase always	194 (38.8)	45 (35.4)	70 (44.9)	42 (35.0)	37 (38.1)
	Total (N)	500	127	156	120	97

Chi-Square value = 25.80; degree of freedom (d.f.) = 6, Significant at 5 per cent level of significance.

The table reveals that most of the respondents (48.2%) feel that a pack specifically draws their attention only if it highlights information about some special offers by the company. 38.8 per cent of the respondents have disclosed that they are brand loyal and any extra appeal in a pack cannot stimulate them to switch their brand. Only 13 per cent of the respondents have admitted of paying attention to the pack attractiveness of a product. This gives a clear indication that most of the respondents pay attention to a pack only if it features special offer by a company.

Income-wise analysis reveals that most of the respondents (49.6%) belonging to lowest income category I_1 pay attention to a package 'only to find out if any product has some special offer' whereas 35.4 per cent of the respondents from the same income category state that they 'pay attention only to the brand they purchase'. Only 19 per cent of the respondents agree with the statement 'I always pay attention to the pack attractiveness of all the products'.

In case of income category I_2, most of the respondents (44.9%) agree with the statement 'I pay attention only to the brand I purchase always' whereas 39.7 per cent agree with the statement 'I pay attention only to find out if any product has some special offer'. A mere 15.4 per cent of the respondents agree with 'I always pay attention to the pack attractiveness of all the products'.

A majority of the respondents (55%) belonging to income category I_3 stated that they pay attention only to find out if any product has some special offer followed by 35 per cent of the respondents stating that they pay attention only to the brand they purchase always. Only 10 per cent of the respondents mentioned that they always pay attention to the pack attractiveness of all the products.

Majority of the respondents (51.5%) of the higher income category I_4 mentioned that they pay attention only to find out if any product has some special offer. 38.1 per cent of the respondents agree that they pay attention only to the brand they purchase always. Only 10.3 per cent of the respondents stated that they always pay attention to the pack attractiveness of all the products.

The results of the Chi-square test show that the hypothesis–"There is no significant difference among the respondents belonging to different income groups with respect to the attention paid to the pack design"- cannot be retained. Statistically, there are significant differences among respondents belonging to different income categories with respect to attention paid to the pack design.

Summing up, most of the respondents, irrespective of the income categories, stated that they pay attention to a pack only to find out if any product has some special offer.

1.3: Packaging Attributes Considered in Buying Products

In an attempt to highlight the importance attached to the attributes, nine attributes were identified. These attributes include 'attractive colour schemes', 'light colours with clear wordings', 'easy to read instructions', 'easy to read ingredients', 'easy to read product price and other manufacturing details', 'package quality/material', 'recyclable packing', 'sealable/reusable packing', 'package design that will facilitate easy carrying of the product while travelling'. The respondents were asked to rate these attributes in terms of importance on a five-point Likert scale

(Most important to most unimportant) while buying a pack.

To determine the degree of importance given to these attributes by different income categories, the mean scores were computed by assigning weights 5, 4, 3, 2 and 1 to 'most important, 'important', 'neither important nor unimportant', 'unimportant' and 'most unimportant' in that sequence. A higher score indicates more importance to the source of information than lower score.

To examine whether there is any significant difference amongst the respondents belonging to different income groups with respect to some aspects of packaging, the following null hypothesis has been tested.

H_o-1: There is no significant difference among the respondents belonging to different income groups regarding their preferences for various attributes of packaging of a product.

In order to compare income-wise mean scores of the responses, ANOVA was applied. F-ratios have been applied to the responses of each statement. Mean scores along with F-ratios for various statements depicting attitude of the respondents towards various aspects of packaging is presented in Table 1.3.

Table 1.3
Attitude towards Various Aspects of Packaging (Income-wise Mean Scores and F-Ratio)

Sr. No	Statements (Attributes)	Overall	I_1	I_2	I_3	I_4	F-ratio
		Means	Means	Means	Means	Means	
1	Attractive colour schemes	3.51	3.50	3.53	3.55	3.49	0.66
2	Light colours with clear wording	3.71	3.68	3.71	3.72	3.74	0.41
3	Easy to read instructions	4.00	4.42	4.31	3.77	3.51	3.49*
4	Easy to read ingredients	4.00	3.99	3.98	4.03	4.02	1.26
5	Easy to read product price and other manufacturing details	3.97	3.90	4.01	3.98	3.99	1.97
6	Package quality/material	2.68	2.69	2.77	2.47	2.78	4.71*
7	Recyclable packing	2.71	2.69	2.71	2.73	2.71	1.76
8	Sealable/reusable packing	2.88	2.86	2.89	2.88	2.90	1.15
9	Package design that will facilitate easy carrying of product while travelling	3.33	3.23	3.42	3.33	3.36	1.24

The table reveals that most of the respondents consider the attributes 'easy to read instructions' (MS=4.00), 'easy to read ingredients' (MS=4.00), and 'easy to read product price and other manufacturing details' (MS=3.97) as imperative as the mean scores are close to 4. The mean scores of statements, 'attractive colour schemes' (MS=3.51), 'package design that will facilitate easy carrying of the product while travelling' (MS=3.33) show that they are considered 'neither important nor unimportant'. Attributes, 'sealable/reusable packing' (MS=2.88) and 'recyclable packing' (MS=2.71) and 'package quality/material' (MS=2.68) have been considered as 'unimportant' by the respondents.

Further, income-wise analysis of the table shows that irrespective of income categories, 'easy to read instructions' and 'easy to read ingredients' have been considered the most important attributes of the packaging of a product. 'Easy to read product price and other manufacturing details' is also a preferred attribute amongst respondents of all income categories. Respondents irrespective of their income categories have given the least importance to 'package quality/material' and also to its being recyclable and sealable. A low preference for 'recyclable packing' indicates that the consumers from all income categories desire the package to be attractive and easy to carry but are hardly concerned about its safe disposal or recyclability.

A high preference among respondents for 'attractive colour schemes' reveals that visual appeal has a major effect in shaping the perception of consumers about a package.

The F-ratios reveal that there are no significant differences among the respondents belonging to different income categories, with respect to their rating towards different attributes of a package, as the p-value for these aspects is more than the assumed p-value. The differences in 'easy to read instructions' and 'package quality/material are significant among respondents belonging to different income categories at 5% level of significance.

Summing up, 'easy to read instructions', 'easy to read product price and other manufacturing details' and 'easy to read ingredients' are the attributes that have been considered as 'most attractive aspects' of a pack by most of the respondents, irrespective of their income categories. 'Sealable/reusable packing' and 'recyclable packing' have been considered as insignificant by a significant number of the respondents. This depicts that the quality of the material and its safe disposability are not the matters of much concern to the respondents. The respondents find visual and content elements of a package more important. This intensifies the necessity of enlightening the customers about the notion of protective and eco-friendly packaging.

Suggestions and Implications

The strengths and weaknesses of the important attributes influencing brand/package choice as revealed by this study may be used as an index for improvement in the product strategy of FMCG companies selling their products. Some of the recommendations in this respect are as follows.

- While selecting a pack for purchase, the consumers consider the presence of 'Content Information' like usage instructions, ingredient list and price details as vital elements of a virtuous package. Special attention needs to be given by the marketers on these aspects while designing a package.

- The visual elements of a package like attractive colour schemes were relatively given lesser importance by the respondents. Consumers are less likely to be influenced by the level of attractiveness of a package. The colours, textures, brightness of the colours used on a pack were considered as a trifling factor affecting their brand preferences. Bearing in mind that consumers will not buy a specific brand merely because of an attractive package, marketers must focus on content information like ingredients, instructions and the manufacturing details.

- Consumers do pay attention if a package highlights a promotional offer or indicates the word 'improved'. Packages, which are larger than the competing brand, do attract attention of the customers. Since, practically, it is not possible for a marketer to introduce promotional offers or product modifications on a regular basis, the companies can packages in a way that makes they look larger than the competing brands. This could be attained through package design manufacturing and extraordinary offerings like a two in one package, which creates an effect of the pack being bigger than others.

- The main material of choice for packaging has always been plastic because of its benefits of convenience. However, plastic packaging has a disadvantage due to its inability to biodegrade in the environment. Infrastructure for recycling or disposal remains limited in developing economies. Discarded packages are 'flexible waste' and a potential long-term environmental nuisance. It was observed in the study that consumers have no apprehensions regarding the safe disposal or recyclability of a package. In the near future with an increase in consumers' awareness about the environment, they might even go against such companies involved in the development of non-biodegradable products. This intensifies the need to enlighten the companies to develop eco-friendly packaging technologies as new technologies and techniques provide an advantage of low cost, rapid production and improved quality. Consumers also need to be educated about the proper disposal of the packs. Certain suggestions might be:

a. Carry out recycling of the plastic pack into plastic bags and sheets. Companies can encourage customers to collect and deposit the recyclable package material with the retailer with a reward attached to it such as exchange of a fixed number of empty packs to get a free off coupon valid for on the next purchase.

b. FMCG companies can install special bins in different parts of a city especially for discarded packs, which can be collected later by the companies and recycled.

c. Simple leaflets can be distributed along with a product informing customers about certain collection points of discarded packs so that the disposal problem can be handled efficiently.

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Table 1.1
Attitude towards Packaging
(Income-wise Mean Scores and F-Ratio)

Sr.No.	Statements	Overall	I_1	I_2	I_3	I_4	F-Ratio
		Means	Means	Means	Means	Means	
S_1	I pay attention to the most attractively packaged product	3.84	3.89	3.8	3.96	3.69	1.96
S_2	I pay attention to the usage instructions mentioned on the package of a product	4.55	4.69	4.99	4.58	4.72	2.02
S_3	I usually stick to my favourite brand regardless of the attractiveness of an alternative brand's packaging	3.57	3.50	3.56	3.62	3.64	1.96
S_4	I switch over to another brand with attractive packaging	3.34	3.39	3.33	3.38	3.25	2.06
S_5	I pay attention to an alternative brand with attractive packaging if it mentions the word "improved" or is bigger in size	3.97	4.48	3.81	4.04	3.84	7.08
Total (N)		500	127	156	120	97	

Table 1.2
Attention Paid to Some Characteristics of the Pack Design
(Income-wise Frequency Distribution of Respondents)

Sr.No.	Statements	Overall	I_1	I_2	I_3	I_4
1	I always pay attention to the pack attractiveness of all the products	65 (13.0)	19 (15.0)	24 (15.4)	12 (10.0)	10 (10.3)
2	I pay attention only to find out if any product has some special offer	241 (48.2)	63 (49.6)	62 (39.7)	66 (55.0)	50 (51.5)
3	I pay attention only to the brand I purchase always	194 (38.8)	45 (35.4)	70 (44.9)	42 (35.0)	37 (38.1)
	Total (N)	500	127	156	120	97

Chi-Square value = 25.80; degree of freedom (d.f.) = 6, Significant at 5 per cent level of significance.

Table 1.3
Attitude towards Various Attributes of Packaging
(Income-wise Mean Scores and F-Ratio)

Sr. No	Statements (Attributes)	Overall	I_1	I_2	I_3	I_4	F-ratio
		Means	Means	Means	Means	Means	
1	Attractive colour schemes	3.51	3.50	3.53	3.55	3.49	0.66
2	Light colours with clear wording	3.71	3.68	3.71	3.72	3.74	0.41
3	Easy to read instructions	4.00	4.42	4.31	3.77	3.51	3.49*
4	Easy to read ingredients	4.00	3.99	3.98	4.03	4.02	1.26
5	Easy to read product price and other manufacturing details	3.97	3.90	4.01	3.98	3.99	1.97
6	Package quality/material	2.68	2.69	2.77	2.47	2.78	4.71*
7	Recyclable packing	2.71	2.69	2.71	2.73	2.71	1.76
8	Sealable/reusable packing	2.88	2.86	2.89	2.88	2.90	1.15
9	Package design that will facilitate easy carrying of product while travelling	3.33	3.23	3.42	3.33	3.36	1.24

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New Market Entry Strategies: Public and Private Sector Banks in India

Dilpreet Singh, Harpreet Singh, and Namrata Sandhu

Abstract

All organizations, including banks strive to extend the ambit of their operations. Towards this end, they further reach out to existing customers or make efforts to tap untapped niches. Given this backdrop, the present study attempts to establish the preferred new market entry strategies of public and private sector Indian banks. It also seeks to examine if there is a significant difference between the new market entry strategies adopted by both categories of banks. Data for the study was collected from 364 bank officials employed with 21 public sector and 12 private sector banks. The respondents of the study occupied at top/middle level positions in banks and were involved in the development/execution of bank strategies. The study established the preferred new market entry strategies adopted by public and private sector banks. It also revealed that private sector banks give more importance to new market entry than public sector banks.

Keywords: *Strategy, Bank; India; Market entry; Two-sample t-test*



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Banks are constantly on the lookout for new markets. New markets may be the untapped geographic pockets or the neglected demographic niches within the existing markets. These unexplored virgin markets, also known as the 'financially excluded' (Leyshon, 1995; Carbo, Gardener and Molyneux, 2005), generally comprise the underprivileged sections of the society, the unemployed people, women, old people/senior citizens and children.

The numerous advantages of targeting the hitherto un-served make a very compelling case for reaching out to them. From the point of view of banks, it enhances profits and market share (Singh and Singh, 2016). From the point of the economy, it results in developmental gains. From the point of view of the society, it reduces poverty (Beck and Demirgüç, 2008; Jack and Suri, 2009); and from the point of view of individuals it creates economic opportunities that help them manage their resources more efficiently. However, financial

inclusion in India stands at 53 per cent (Gupta, Dahlberg and Majmudar, 2015). Let us delve into some of the supply-side reasons for the extremely low level of financial inclusion in India.

A primary cause for financial exclusion in India is the non-availability of financial services in the excluded areas (Shetty and Veerashekharappa, 2009). The poor profit margins associated with reaching out to the excluded groups (Berger, Leusner and Mingo, 1997) has traditionally discouraged the financial services industry, and specifically banks from catering to the needs of the untapped and the under-tapped sections of the population. The historic decision of the government to permit banks to shift their branches from non-performing rural locations to alternate high-business areas further augmented the problem (Ramachandran and Swaminathan, 2005). However, the recommendations of the Narasimham Committee in the 1990s and competition from private sector banks led to a drastic shift in the approach and attitude of Indian banks towards new market entry. The public sector banks were forced to rework their old tactics and callous attitude towards the excluded groups. The mantra of 'high reliability and less profit orientation' underwent a change and public sector bank strategists started advocating new market entry (Narasimhan and Zhang, 2000). While profit maximization still remained a secondary objective for public sector banks, the realization that adequate profit was necessary for survival and fulfilment of socioeconomic obligations dawned clear and strong (Mittal and Dhade, 2007).

This resulted in a rethinking in the Indian banking industry and banks started exploring new avenues of expansion and penetration. Indian banks, like their counterparts abroad, resorted to the most prominent avenue of new market entry – opening new branches (Hirtle and Metli, 2004; Berger and Dick, 2007), and a vigorous program of large-scale branch expansion ensued. This effort of the banks gained momentum due to a shift from class banking to mass banking in the wake of nationalisation of banks (Batra and Sumanjeet, 2012). Thanks to the strategic investments in building large branch networks, rural and semi-rural branches today account for 65 per cent of the total network of the public sector banks and 20 per cent of the total network of the private sector banks in India (25-27 per cent in case of the old private sector banks and roughly 15 per cent in case of the new private sector banks) (RBI, 2015).

In their effort to further increase their customer base, some banks also adopted the strategy of acquiring other banks. The merits of acquisition as a growth strategy are well known. It not only leads to an increase in the value of a company, but also helps explore new business opportunities. It also creates prospects for the export and application of existing knowledge to new endeavours (Anslinger and Copeland, 1996). The obvious benefits of acquisition motivated many Indian banks to “unite and expand” (Adhikar, 2014). India's tryst with bank acquisitions saw the acquisition of the Global Trust Bank by the state-run Oriental Bank of Commerce, Centurion Bank of Punjab by HDFC Bank, affiliates of State Bank of India with State Bank of India, the much-debated acquisition of ING Vysya by Kotak Mahindra Bank, etc. It is believed that these acquisitions increased the reach, earnings and loans of the participating banks (ET, 2014). It may not be amiss to point out here that though many Indian banks have reaped the benefits of acquisition, on the whole acquisition is not a very popular strategy in Indian banking. One can at best quote only a dozen acquisitions in the last 15 years, and none of the big players, with the exception of State Bank of India, were involved in these acquisitions.

Appointment of intermediaries to improve the penetration of banking services was yet another strategy adopted by Indian banks to expand the reach of their services. Literature on benefits of intermediaries in service industries provides sufficient justification for their existence (Jensen and Meckling, 1976; Diamond 1984). Retail agents play the role of providing low-cost access to financial services in the otherwise excluded areas (RBI, 2015). They also reduce the extent of information asymmetry. Most importantly, they significantly decrease the time required to break even in rural penetration. Keeping its many advantages in mind, attempts have been made to appoint at least one banking correspondent in every village. These correspondents typically collect cash, disburse cash, make bill payments and transfer money on behalf of the bank. The total count of the banking correspondents in India is close to 2,50,000 and 27 out of the 50 public and private sector banks have engaged

banking correspondents (RBI, 2015). The number of banking correspondents is further likely to increase in the light of the recent move of the Reserve Bank of India to allow Non-Banking Financial Companies (NBFCs) to act as business correspondents (BC). It might be apt to mention here that many banks, such as Yes Bank, have already taken advantage of this change and have appointed NBFCs as BCs to offer banking services.

In the recent past, banks have also attempted to aggressively leverage technology to reach the financially excluded groups. Though today the success of this strategy is limited due to poor Internet and mobile penetration in rural areas, technology holds the promise to drive financial inclusion in the future. Its application will be the lever that will unleash the future wave of growth and profits in Indian banking (Sandhu and Singh, 2016; Singh and Sandhu, 2016).

Despite the adoption of many strategies in the past to increase the extent of banking penetration, the goal of banking the unbanked still remains unrealised. This has led the regulators to start many schemes and bring about numerous regulatory modifications. The Pradhan Mantri's Jan Dhan Yojna (PMJDY) was launched in August 2014 with the aim to include 7.5 crore excluded households. Fortunately, this target was achieved well before its deadline of January 26, 2015. The number of zero-balance accounts as a percentage of the total new accounts decreased from 74 per cent in September 2014 to 46.93 per cent in July 2015 (PTI, 2014; National Bureau, 2015), indicating the success of the scheme. On the flip side however, private sector banks did not whole-heartedly participate in the scheme. Out of the total new accounts opened, private sector banks opened only 3.6 per cent accounts (Upadhyay, 2015). Critics also question the mode of penetration adopted by the scheme, since only 28 per cent accounts opened under this scheme were active during the initial phase (Upadhyay, 2015).

The Reserve Bank of India has also made many attempts in the recent past to encourage specific excluded groups to join formal banking. With a view to catch the youth early and foster good saving habits among them (Schiele, 1974; Javalgi, Belomax and Robinson, 1990; Philip, Haynes and Helms, 1992; Singh, Sandhu and Singh, 2013), minors above the age of ten can now open and operate bank accounts independently (TNN, 2014). Women customers are being offered special rates on deposits and loans; and many attempts are being made to extent formal banking services to the rural poor residing in far-off remote areas.

Yet another banking initiative aimed at spurring new market entry is the establishment of the 'Payments Banks.' With a view to enhance banking penetration, payments banks will typically target the low-income population groups, migrant labour, small businesses and the unorganized sector entities. To start with, payments banks will only be allowed to provide services related to remittances and deposits, but not loans. Bharti Airtel in conjunction with Kotak Mahindra Bank, Aditya Birla Group and Reliance jointly with State Bank of India, Paytm, and Department of Posts are among the pioneers who have been granted licenses to operate payments banks. These banks are expected to ride high on technology and use non-conventional channels to reach the customers. It is believed that payments banks will complement the existing banking system through mutually beneficial partnerships.

In developing countries including India, postal firms typically have a dense network of counters and cover rural areas where the banking services are absent (d'Alcantara and Gautier, 2013). In its endeavour to expand banking services with the help of this network, the Indian government plans to establish the 'Post Bank of India' in the near future. Strategists are hopeful that this will make the Indian banking service-scape very interesting. It will also be a forceful step towards penetration of banking services.

As can be seen, over the years many initiatives have been taken by the central bank, the government and the commercial banks to deepen the reach of banking services in India. Of specific concern to the present study is the new market entry strategies adopted by commercial banks in India. Therefore, the present study attempts to first enlist and then establish the preferred new market strategies adopted by Indian banks. It also seeks to understand whether there is a significant difference in the new market entry strategies adopted by public and private sector banks.

2. Literature Review

Financial service providers have typically viewed their primary customer base as males between 30 and 50 years (Bartos, 1982). These men are generally the primary wage earners and financial decision makers of their households. The traditional neglect of other categories of customers, such as women, youth and those over 50 years, presents growth opportunities to the service providers (Schiele, 1974; Javalgi et al., 1990; Philip et al., 1992). There is a possibility of increasing earnings by tapping the hitherto neglected niches or the "golden geese" as they are referred to (Sajeev and Thangavel, 2012). Service providers must thus shift their focus from the already served to the under-served and un-served groups in the population (Friedline and Rauktis, 2014). They must develop strong, efficient and previously unused game plans (Anthony, Eyring and Gibson, 2006; Gaudillat and Quelin, 2006), specifically aimed at actively seeking penetration and expansion (Krogh and Cusumano, 2001). Experts believe that where new market entry is concerned, innovation is the key (Tushman and Anderson, 1986; Cho and Pucik, 2005).

The existing game plan for unleashing the potential of the excluded groups involves generation of awareness, strengthening the microfinance institutions, establishment of business correspondent outlets, and increase in rural bank branches (Ghate, 2008; Kalita, 2013). It may be of interest to note that some of these initiatives are laudable (Ghate, 2008) – they have significantly increased deposit and credit mobilization (Ahmed, 2009), but in its entirety the game plan has not been particularly effective in achieving its objective. Vast sections of the population of the country, especially the rural poor still remain excluded from mainstream banking (Kumar and Gupta, 2009; Arora and Meenu, 2012). Critics blame gaps in the regulatory, legislative and strategic framework for the present state of affairs (Kumar and Mohanty, 2011).

Suggested measures to further penetration of banking services include a spirited focus on branchless banking and extensive use of technology (Byers and Lederer, 2001; Peterson, Welch and Liesch, 2002; Kumar and Gupta, 2009; Kumar, Mathur and Lal, 2013; Singh and Sandhu, 2016). Maintaining a dense network of physical branches is a high cost proposition. Rural bank branches are by and large underutilised and hence unprofitable (d'Alcantara and Gautier, 2013). Resorting to branchless and briefcase banking can overcome this problem. The low cost and ease associated with the use of this strategy make a very strong case for its adoption in India (Srivastava and Ambujakshan, 2012). Banks can also make use of the existing networks, such as those of post offices to reach the unbanked (d'Alcantara and Gautier, 2013). Thus, there is a need for banks to develop suitable partnership models and enter into strategic tie-ups with non-banks and leading mobile operators (Hamel, 1991; Mitchell and Singh, 1993; Sawler, 2005, Bihari, 2011). These alliances should be aimed at taking advantage of existing channels and technology to deepen banking penetration (IFC Mobile Money Study, 2012). In this regard, the framework proposed by Sawler (2005) can help decide the kind of alliance that may prove helpful and profitable.

Further, literature on banking penetration also advocates mergers and acquisitions to foray into previously untapped markets (Cyree, Wansley and Black, 2000; Gulati, 2004). Empirical evidence suggests that mergers and acquisitions not only lead to business expansion, but also significantly enhance profits. They provide access to existing distribution channels likely to overcome numerous price and non-price barriers to market entry (Bihari, 2011).

The above-discussed measures cannot be successfully implemented unless suitably complimented by changes in the regulatory framework. Previous researchers have opined that lack of innovation friendly regulations have held back penetration of banking services in the past (Sandhu and Singh, 2016). Therefore, easing the regulatory framework is likely to help the cause of banking penetration (Goyal, 2008; Kumar and Gupta, 2009). It will suitably support the existing private and public sector action aimed at expanding the reach of banking services in India (Sakariya, 2013).

2.1 Need and Objectives of the Study

As can be seen, the existing literature on banking penetration is replete with the causes (Kumar and Mohanty, 2011), consequences (Beck and Demirgüç, 2008; Jack and Suri, 2009) and suggestions (Byers and Lederer, 2001; Goyal,

2008; Kumar and Gupta, 2009; Sandhu and Singh, 2016) to enhance banking penetration. Much has also been said about its history (Batra and Sumanjeet, 2012) and present status (Gupta et al., 2015). However, the authors could not come across any study categorically enlisting the new market entry strategies adopted by banks. Also, they could not find any study that compares how private and public sector banks in India approach new market entry. It would be appropriate to mention here that a lot of data is available on the number of new accounts, number of mergers and acquisitions, number of rural branches, number of banking correspondents etc. employed by public and private sector banks in India (RBI, 2015; Upadhyay, 2015), but there is no study that compares the approach of public and private sector bankers towards new market entry. This gap in literature provides justification for the present study.

Therefore, the present study is an attempt to assess the new market strategies of public and private sector banks in India. The specific objectives of the study are as follows:

1. To establish the most preferred new market strategies adopted by public and private sector banks in India.
2. To assess if there is a significant difference between the new market entry strategies adopted by public and private sector Indian banks.

3. Research Methodology

3.1 Hypothesis

The aforementioned studies indicate that public sector banks pursue new market entry more aggressively than the private sector banks (RBI, 2015; Upadhyay, 2015). The hypothesis of the current study examines this phenomenon on the basis of primary data collected from Indian bankers.

H0: *There is no significant difference between the new market entry strategies adopted by public and private sector Indian banks.*

H1: *There is a significant difference between the new market entry strategies adopted by public and private sector Indian banks.*

3.2 Research Instrument

A questionnaire enlisting the new market entry strategies adopted by Indian banks was prepared. The review of existing literature failed to shed adequate light on popular new market entry strategies adopted by banks. Therefore, the list prepared on the basis of review was augmented by the expert opinion of bank strategists. The final exhaustive list, prepared after much deliberation constituted 20 unduplicated new market entry strategies (for list of new market entry strategies refer to Annexure 1). In order to judge the relative importance that bank officials place on a particular new market entry strategy, the responses of the respondents were anchored on a five-point Likert scale. The questionnaire also captured the demographic profile of the respondents. Before administration, the questionnaire was tested for validity and clarity.

3.3 Sample

The final pretested questionnaire was conveniently administered over a fifteen-month period (March 2014 to May 2015) to 1150 bank officials. Care was taken to approach only those involved in the development/execution of bank strategies (bank officials designated at top/middle level positions).

The response rate of the survey was very low – 31.65 per cent. While 1150 questionnaires were distributed, only 364 usable responses were obtained. Most of the respondents of the study were senior bank officials. This accounts for the low response rate of the survey. The final sample constituted of responses from vice-presidents, assistant vice-presidents, assistant general managers, zonal managers, chief managers and managers of 21 public sector and 12 private sector Indian banks. For details of the sample refer to table 1.

Table 1. Sample Details

Number of questionnaires distributed			1150
Number of usable questionnaires			364
Response rate			31.65%
Public sector banks (n = 214)		**Private sector banks (n = 150)**	
Bank name	**Number of responses**	**Bank name**	**Number of responses**
Allahabad Bank	5	Axis Bank	13
Andhra Bank	13	City Union Bank Ltd.	1
Bank of Baroda	3	Federal Bank	7
Bank of India	1	HDFC Bank	49
Bank of Maharashtra	2	ICICI Bank	17
Canara Bank	13	IndusInd Bank	13
Central Bank of India	15	ING Vysya Bank	2*
Corporation Bank	2	J and K Bank	6
IDBI Bank	8	Karnataka Bank	4
Indian Bank	2	Kotak Mahindra Bank	16*
Indian Overseas Bank	3	South Indian Bank	2
Oriental Bank of Commerce	10	Yes Bank	20
Punjab and Sind Bank	71		
Punjab National Bank	24		
State Bank of India	14		
State Bank of Hyderabad	1		
State Bank of Patiala	10		
Syndicate Bank	2		
UCO Bank	7		
Union Bank of India	2		
United Bank of India	2		
Vijaya Bank	4		

*Kotak Mahindra Bank has now acquired ING Vysya Bank

Source: Author's study

3.4 Profile of the Respondents

Table 2. Demographic Profile of the Respondents

Gender	
Male	76.10
Female	23.90
Age	
Under 30 years	28.85
31 – 40 years	22.53
41 – 50 years	14.56
Over 51 years	34.07

All figures in percentages

Source: Author's study

Table 2 presents the demographic profile of the 364 respondents. As can be seen, 76.10 per cent of the respondents of the study were male and the remaining 23.90 per cent were female. Further, 28.85 per cent of the respondents were under 30 years, 22.53 per cent of the respondents were between 31 and 40 years, 14.56 per cent respondents were in the age category of 41 to 50 years, and 34.07 per cent respondents were over 51 years in age (age categories have been adopted from Sarros, Pirola-Merlo and Baker, 2012).

3.5 Data Analysis Techniques

In order to establish the most preferred new market entry strategies adopted by public and private sector Indian banks, mean scores for each strategy were calculated. The purpose of this endeavour was to make the otherwise incomparable new market entry strategies comparable and capture the responses of the respondents in a single representative value **(Medhi, 1992; Salkind and Rasmussen, 2006). This representative value was then used to rank the new market entry strategies on the basis of their importance (Herwijnen, 2006).**

Further, a two-sample t-test was used to assess whether there was a significant difference in the importance that public and private sector banks place on new market entry. The test also helped ascertain the relative importance given by public and sector banks to new market entry (Nargundkar, 2007).

4. Results

4.1 Preferred New Market Entry Strategies of Public and Private Sector Banks

Table 3. Preferred New Market Entry Strategies – Public Sector Banks*

New market entry strategy	Mean score	Rank
Installing new ATMs	1.39	1
Low pricing	1.48	2
Appointment of business correspondents	1.53	3
Opening new branches in rural areas	1.55	4
No frills account	1.65	5

Source: Author's study

Table 4. Preferred New Market Entry Strategies – Private Sector Banks*

New market entry strategy	Mean score	Rank
Internet banking	1.38	1
Plastic money	1.44	2
Product innovations	1.45	3
Mobile banking	1.48	4
Personal selling	1.57	5

Source: Author's study

** In order to judge the relative importance that bankers place on a particular new market entry strategy, the responses of the respondents were anchored of a five-point Likert scale with 1 indicating "very important" and 5 indicating "very unimportant." Hence lower mean score indicates higher importance.*

Tables 3 and 4 enlist the most preferred new market entry strategies of public and private sector Indian banks. As can be seen, the most preferred new market entry strategies of the public sector banks are installing new ATMs, low pricing, appointment of business correspondents, opening new branches in rural areas, and no frills account. The new market entry strategies preferred by private sector banks are entirely different from these strategies. The private sector banks seek to enter new markets with the help of Internet banking, plastic money, product innovations, mobile banking, and personal selling.

4.2 Difference in New Market Entry Strategies of Public and Private Sector Banks – Test of Significance

Table 5. Independent Samples Test

	Type of bank	N	Mean	Std. deviation	Std. error mean
New market entry strategies	Public	214	1.8247	.39548	.02710
	Private	150	1.7316	.43061	.03504

Table 6. Lavene's Test for Equality of Variances

		Levene's test for equality of variances		t-test for equality of means
		F	Sig.	T
New market entry strategies	Equal variances assumed	.040	.842	2.132
	Equal variances not assumed			2.102

Table 7. Lavene's Test for Equality of Means

		t-test for equality of means		
		df	Sig. (2-tailed)	Mean difference
New market entry strategies	Equal variances assumed	362	.034	.09310
	Equal variances not assumed	305.690	.036	.09310

Table 8. Standard Error Difference

		t-test for equality of means		
		Std. error difference	95% confidence interval of the difference	
			Lower	Upper
New market entry strategies	Equal variances assumed	.04366	.00724	.17896
	Equal variances not assumed	.04430	.00593	.18026

Source: Author's study

Tables 5 to 8 exhibit the results of the t-test. The sample of 214 respondents of public sector banks and 150 respondents of private sector banks returned a mean of 1.8247 and 1.7316 respectively (refer to table 5). The mean value for public sector banks is higher than that of the private sector banks. This effectively means that public sector banks give less importance to 'new market entry strategies' than private sector banks.

Further, since the significance level of 'Levene's test for equality of variances' is greater than .05 (refer to table 6), we can assume that group variances are equal. With equal variances assumed, the t value is 2.132 (df = 362 (n-2)). This value is significant (p = .034) (refer to table 6). This lends support to H1 and establishes that there is a significant difference between the new market entry strategies adopted by public and private sector banks.

5. Discussion

First movers do not always earn advantages (Shamsie, Phelps and Kuperman, 2004). This is very true in case of the Indian banking industry. The significant difference in the importance placed on new market entry by public and private sector banks is in sync with their respective performances. Private sector banks give more importance to new market entry than public sector banks; the performance and profit margins of private sector banks are also significantly higher than public sector banks. Though

requiring further substantiation, it is worth pondering if the higher importance given by private sector banks to new market entry has contributed towards their better performance.

Private sector banks rely on innovation and use of technology (refer to table 4) to pursue new market entry. This strategy of private sector banks is in tune with the recommended low cost means to penetrate new markets (Byers and Lederer, 2001; Peterson et al., 2002; Cho and Pucik, 2005; Kumar and Gupta, 2009; Kumar et al., 2013). On the other hand, public sector banks seek to penetrate new markets by building huge networks of branches and ATMs. They aim to achieve rural penetration by opening physical bank branches in rural areas (refer to table 3). This explains why rural business accounts for one-fifth of the total business of public sector banks and one-seventh of the total business of private sector banks (CRISIL, 2015; Merwin, 2015). Therefore, it can be inferred that both categories of banks use different means to achieve new market entry. While private sector banks make use of low cost innovative strategies to achieve penetration, the public sector banks rely on traditional high cost means.

Growth has saturated in the existing markets and the next surge of profits is likely to come from new market entry (Sandhu and Singh, 2016). Thus, growth and profits are the two most significant motivators that are driving new market entry in banking (Singh and Singh, 2016). But, while private sector banks are only driven by these motives, public sector banks also seek market penetration under regulatory and social obligations. This explains their interest in pursuing strategies likely to benefit the society and economy more than the banks themselves.

6. Limitations and Scope for Future Research

The sample for the study was primarily drawn from the state of Punjab in India (237 out 364 responses). Therefore, the results of the study may not be representative of other Indian states.

The study represents the present preferences of public and private sector banks with regard to new market entry strategies. Future researchers may longitudinally study changes in these preferences. They may also assess the impact of these preferences on the profitability of banks.

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Annexure 1. List of Strategies

Sr. No.	New market entry strategies
1	Low pricing
2	Opening new branches
3	Opening new branches in rural areas
4	Opening new branches in urban areas
5	Appointment of direct selling agents
6	Appointment of business correspondents
7	Personal selling
8	Identification and exploitation of acquisition / merger opportunities
9	Installing new ATMs
10	Advertising
11	Internet banking
12	Targeting high net worth individuals
13	Targeting employee salary accounts
14	Product innovations (e.g. festival bonanza schemes)
15	Business intelligence
16	Building brand name / image
17	Mobile banking
18	Plastic money
19	Segmenting and targeting (e.g. school kids, women)
20	No frills account

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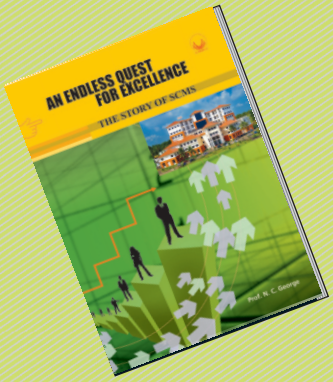

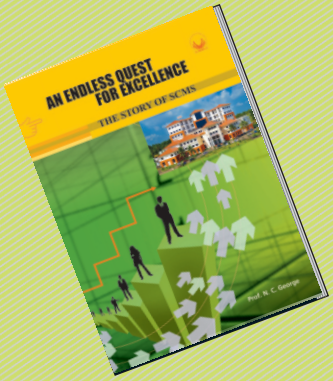

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